SECTION A

(General aspects)

General aspects

The State of Punjab is divided into 19 districts, namely, Hissar, Rohtak, Gurgaon, Karnal, Ambala, Simla, Kangra, Hoshiarpur, Jullundur, Ludhiana, Ferozepore, Amritsar, Gurdaspur, Bhatinda, Kapurthala, Mohendargarh, Patiala, Sangrur, and Lahaul and Spiti. These districts comprise 73 tehsils and 21,516 villages.

2. The total population of the Punjab, according to the 1951 census, is 16,135,000, which gives an average density of 340 persons per square mile as against the average density of 287 for the country as a whole. The agricultural population forms 65 per cent of the total, with a concentration of about 80 per cent in the rural areas. The non-agricultural communities are mainly concentrated in the Ambala, Ludhiana, Jullundur and Amritsar districts. The peasant-proprietors constitute about 60 per cent of the agricultural population, tenants are about 1/3rd of the peasant-proprietors, and the agricultural labourers just a little over 1/6th. The non-cultivating owners are about four per cent of the total.

3. The State of Punjab can broadly be divided into three principal physical divisions as follows :—

(*i*) The Himalayan Region (mountainous tract);

(*ii*) The Sub-Himalayan Region (sub-montane tract); and

(*iii*) The plains (alluvium) comprising —

- (*a*) Eastern plains.
- (*b*) Western plains.

4. The mountainous tract consists of slopes and valleys of the parallel ranges of the Himalayas and the Shiwalik hills, Kasauli, Dagshai and Subathu series.

5. The sub-Himalayan region intervenes between the lesser Himalayas and the plains. They form a system of low foot-hills corresponding to the Shiwalik ranges and are composed entirely of tertiary and principally of the upper tertiary, sedimentary river deposits.

6. The plains consist of alluvium of the Indo Gangetic origin. Approaching south and south-west in the plains, severe aridity prevails. The Great Indian desert makes an entry into these confines of the plains of the State.

Climate

7. The Punjab is an inland State and the climate over the greater part is of the most pronounced continental character, extreme summer heat alternating with severe winter cold. The greater portion of rainfall occurs in summer from June to September, while the winter rains are received from December to February. Precipitation decreases as the distance from the Himalayas increases. The presence of the mountainous and sub-montane zones largely modifies the temperature and other climatic factors in different parts of the State. The annual rainfall in the mountainous region is as high as 100 inches, but it decreases as we proceed to the south-west, being as low

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as 10 inches in some parts of the Hissar district. Temperature also varies greatly. It is as high as 120 F in the plains and as low as 27° F in the mountainous region. The State has thus been divided into six climatic zones as follows based on the amount of annual precipitation (*vide* Map I) :—

Zone	Annual rainfall (inches)
I	70—100
II	40—70
III	30—40
IV	20—30
V	10—20
VI	below 10

Soils

8. The large variations in climate produce great changes in the soils of the different regions of the State. The distinguishing characteristics of these soils are as given below :—

Chemical characteristics	Climatic zones					
	I	II	III	IV	V	VI
Calcium carbonate %	Nil	0·16	0·17	0·24	1·04	2·30
Organic matter %	1·11	1·00	0·80	0·53	0·50	0·23
Total nitrogen %	0·16	0·08	0·06	0·04	0·04	0·02
pH	5·30	6·50	6·80	7·73	8·35	8·77

9. The soils in the hilly regions are acidic to neutral in reaction and contain little soluble salts. On account of arid conditions prevailing in the plains, there are large accumulations of salts in the soils which show marked alkaline reaction. *Kankar* formation has also taken place at most of the places in the plains.

10. According to the morphological, physico-chemical and chemical characteristics of the soil profiles studied in the different meteorological divisions of the State, the soils can be classified into the following recognised world groups :—

SOIL ZONES OF THE PUNJAB

(Based on rainfall-temperature complex)

Details	Soil zones				
	I (Per-humid)	II (Humid)	III (Semi-humid)	IV (Semi-arid)	V & VI (Arid)
Rainfall (inches) ..	123·13	40·96	29·83	24·36	11·16
Lang's rain factor ..	137·00	38·80	31·40	29·80	11·60
Meyer's N. S. quotient	869·50	222·20	55·50	17·50	—
Soil group description	Pedalfer, black-coloured soil of podsol group, solum 36″	Transitional soil of alluvium origin.	Pedocal, chestnut-coloured soil of alluvium origin, solum 120″.	Pedocal, brown-coloured soil of alluvium origin, solum 54″	Pedocal, sierozem of alluvium origin, solum 36″

11. Map I shows the soil zones of the Punjab based on the rainfall-temperature complex (*vide* paras 8—10). The important crops grown in the different zones are as below :—

	Crops
Zone I (Per-humid)	Tea, paddy, wheat, maize, potato and vegetables.
Zone II (Humid)	Wheat, maize, paddy, gram, sugarcane, cotton, groundnut, potato and vegetables.
Zone III (Semi-humid)	Wheat, barley, maize, paddy, gram, sugarcane, groundnut, cotton, potato and vegetables.
Zone IV (Semi-arid)	Wheat, barley, maize, bajra, gram, groundnut, sugarcane, potato and vegetables.
Zones V & VI (Arid)	Wheat, maize, bajra, gram, groundnut, potato and vegetables.

12. Large tracts in the Punjab (at a moderate estimate of 3.2 million acres) are lying waste and are rendered unproductive due to the development of salinity and alkalinity in the soil. The affected lands are locally known as *kallar, halrathi, reh, usar, thur,* etc. The extent of such lands is increasing rapidly and the areas which once used to grow good crops are becoming barren. Due to the rise in the water-table of the land which followed in the wake of intensive irrigation, large tracts in the Ferozepore, Amritsar, Gurdaspur, Bhatinda, Patiala, Rohtak, Karnal and Hissar districts have been rendered unsuitable for cultivation. It is estimated that about 9.3 million acres of land in the State suffer from water-logging in varying degrees of severity, and every year the water-table of the land is rising at the rate of 6 to 12 inches (*vide* Map IA). Drainage of water-logged areas has thus become an urgent problem in order to restore the affected lands to their former level of productivity.

Irrigation

13. The gross and net irrigated areas in the State during 1955-56 were 9 and 8 million acres respectively, representing 38 and 34 per cent of the area sown. The principal source of irrigation is Government canals constituting 63 per cent of the net irrigated area. Private canals account for an area of about 2 per cent and wells about 34 per cent. Only one per cent of the area is irrigated by tanks and other sources.

14. The extent of irrigation varies from district to district, according to the location of the water sources and the depth of the water-table. In 1953-54, as much as 88 per cent of the cropped area in Amritsar received irrigation, 67 per cent in Ferozepore, 64 per cent in Jullundur and 62 per cent in Ludhiana, while for the districts of Ambala, Hoshiarpur, Gurgaon and Hissar the figures were 9, 13, 18 and 21 per cent respectively.

Natural vegetation, crops grown and yields obtained

15. *Hilly regions.*—The hilly areas of the State are rich in forests of chir (*Pinus longifolia*), deodar (*Cedrus deodara*), Kail (*Pinus excelsa*), Spruce (*Picea morinda*), and bamboo.

16. *Plains.*—In the plains the vegetation is composed of—

(*i*) Trees : shisham (*Dalbergia sisso*), kikar (*Acacia arabica*), ber (*Zizyphus jijuba*), phulahi (*Acacia modesta*), mulberry (*Morus alba*), nim (*Melia indica*), date-palm (*Phoenix sylvestris*), dhak (*Butea frondosa*), jamun (*Eugenia jambolina*), imli (*Tamarindus indicus*), karir (*Capparis aphylla*), pharwan (*Tamarix articulata*), pipal (*Ficus religiosa*), wan (*Salvadora oleoides*), jhand (*Prosopis spicigera*).

(*ii*) *Grasses and weeds* : Dub grass (*Cynodon dactylon*), sarkanda (*Saccharum arundinaceum*), kahi or kans (*Saccharum spontaneum*), baru (*Sorghum halepense*), malha (*Zizyphus nummuleria*), pohli (*Carthamus oxyacantha*), maini (*Medicago denticulata*), bathu (*Chenopodium album*), kasni (*Cichorium intybus*), satyaneshi (*Argemone mexicana*).

17. The principal food crops of the Punjab are wheat, gram, bajra, maize, rice, jowar and barley. Of the cash crops, the most important are cotton, oilseeds and sugarcane.

18. The State is the second largest wheat and gram producing region in the Indian Union, third in respect of barley and maize, and fourth in bajra and sugarcane. The State has been able to wipe off the food shortages of the post-partition period, and has even achieved a position of surplus production in major crops. The total production of cereals during 1956-57 was of the order of 3.5 million tons, gram 2.0 million tons, and cotton 8.0 lakh bales. The average yield of wheat, rice, barley, maize and bajra was about 10, 13, 10, 11 and 4 mds., respectively. The average yields of principal crops grown in the different districts of the Punjab are given in Appendix D.

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SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

19. According to the land utilisation statistics for the year 1957-58, the State of Punjab has an area of 30 million acres classified as under :—

	Acres (millions)
(*i*) Forests	0·93
(*ii*) Land not available for cultivation—	
(*a*) Barren and unculturable land	6·52
(*b*) Land put to non-agricultural use	1·25
(*iii*) Other uncultivated land excluding fallows —	
(*a*) Culturable waste	1·80
(*b*) Permanent pastures and other grazing lands	0·23
(*c*) Land under miscellaneous tree crops and groves	0·02
(*iv*) Current fallows	1·45
(*v*) Fallows other than current fallows	0·01
(*vi*) Net area sown	18·07
TOTAL	30·28

20. It will be observed that the area classified as "other uncultivated land excluding fallows" is 2.05 million acres, while the area classified as "fallows other than current fallows" is very small, being only about 11,000 acres. The district-wise distribution of the area under each of the above heads is indicated in Appendix E.

21. Of the total area of 2.06 million acres under the heads "other uncultivated lands excluding fallow lands" and "fallows other than current fallows", the Government of Punjab originally offered about 1.5 lakh acres for reclamation. Before we visited the representative areas offered for reclamation, we had a general discussion with the officers of the State Government, who pointed out that the data supplied by the State Government was based on the revenue records and that these figures could not be considered very reliable. In particular, the information on the size of blocks was not considered quite accurate. It was, therefore, decided that a team of officers of the Punjab Government should carry out a rapid reconnaisance survey with a view to obtaining certain essential information such as the size of the blocks, the type of soil, etc. Accordingly, the survey was organised and carried out during the months of December, 1959, and January, 1960. As a result of the survey, an area of 3.04 lakh acres was located in the State for reclamation in blocks of 250 acres or more.

22. When we enquired about the reasons for the remaining areas not being available for reclamation, it was stated that the figures under the heads referred to in para 19 could not be relied upon and that the lands were in

scattered pieces and lying waste due to a variety of causes, such as unallotted evacuee property, water-logging, heavy growth of jungle, salinity, alkalinity, etc.

23. In this connection, it is pertinent to point out that, although the Committee is mainly concerned with the location of large-sized blocks of wastelands in each State, the reclamation of wastelands of less than 250 acres in size should also receive due consideration at the hands of the State Governments, since the bulk of wastelands seems to be available in smaller-sized blocks. For this purpose, it is necessary to undertake the survey as suggested in the introductory chapter.

Availability of wastelands

24. Broadly speaking, the wastelands offered for reclamation in the Punjab can be divided into the following five categories :—

I — Lands infested with thick growth of jungle, bushes and shrubs,
II — Lands lying along the banks of the rivers, and infested with pernicious grasses,
III — Saline and alkaline lands with low or high water-table,
IV — Eroded lands, and
V — Sand dunes.

25. The distribution of wastelands under categories I, II, and III above in the different districts is given below :—

District	Area available under category			Total (acres)
	I	II	III	
Karnal	15,000	—	—	15,000
Hissar	25,000	—	15,000	40,000
Patiala	1,500	—	—	1,500
Rohtak	350	—	10,000	10,350
Amritsar	—	24,500	50,000	74,500
Jullundur	—	11,000	5,000	16,000
Kapurthala	—	30,000	35,000	65,000
Ludhiana	—	11,000	8,000	19,000
Ferozepore	—	17,000	30,000	47,000
Gurdaspur	—	6,300	5,000	11,300
Gurgaon	—	—	5,000	5,000
TOTAL ..	41,850	99,800	163,000	304,650

26. Similar information in respect of wastelands in categories IV and V was not furnished to the Committee, but it was reported that about 20 lakh acres in category IV and 4 lakh acres in category V were likely to be available for reclamation. The wastelands in category IV are mainly found in the districts of Gurdaspur, Hoshiarpur, Ambala, Gurgaon and Kangra, while those in category V are located in the districts of Hissar, Mohindergarh, Gurgaon, Ferozepore and Bhatinda. A map showing the location of blocks of wastelands in different categories is appended (Map II)

CATEGORY I

Details of blocks under different categories

27. Six blocks comprising a total area of 41,850 acres have been located for reclamation in the districts of Karnal, Hissar, Patiala and Rohtak as per details below :—

District	Name of Block	Block Number	Area (acres)
Karnal	Guhla	1	15,000
Hissar	Ottu	2	15,000
	Fatehabad	3	5,000
	Tohana	4	5,000
Patiala	Harchandpura	5	1,500
Rohtak	Gujjar Kheri	6	350

28. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

29. *Block* 1.—This block has an area of 15,000 acres and is located in about 30 villages of Guhla sub-Tehsil, in the Karnal district. The entire area appears to have been under cultivation some years ago, but is now water-logged due to lack of proper drainage. In recent years, a deep channel has been dug in a length of 35 miles of the course of the Saraswati, a natural stream, which has provided effective drainage for the entire area. The block is infested with thick jungles of *wan, dhak, jand,* etc. The soil is alluvium, ranging from loam to clay loam with patches of saline land here and there. Irrigation is at present seasonal, but will be perennial after the completion of the Bhakra Canal system.

30. Of 20,000 acres comprising this block, 5,000 acres have been cleared of jungle growth under the Punjab Land Reclamation Scheme, and are growing good crops of paddy. The remaining area of 15,000 acres is still to be reclaimed.

31. *Block* 2.—This block comprising 15,000 acres lies along the river Ghaggar on the Sarsa-Ottu road in the Hissar district and along the Ghaggar canals taken from the Ottu weir up to the Rajasthan border. The land is infested with thick jungle growth of *wan, jand, karir,* etc. The soil is fine silty loam in texture, but is poor in organic matter. It is, however, free from salinity or alkalinity. Seasonal irrigation is available from the canals taken from the Ottu weir. The means of communication are not very satisfactory.

32. *Block* 3.—This block consists of about 5,000 acres and is situated along the Fatehabad-Ratia road in the Hissar district. The land is infested with thick jungle growths. The texture of the soil varies from loam to clay loam, and at places where the land is subject to floods, the soil is heavy in texture. Saline and alkaline patches exist here and there. The area is commanded by the Bhakra Canal system.

33. *Block* 4.—The block measuring about 5,000 acres is situated in the Hissar Tehsil, and forms part of the Tohana C.D. Block which is connected by a good road. The soil is of the same type as in block 3, and the land is infested with jungle.

34. *Block* 5 comprises about 1,500 acres and is located near village Harchandpura in the Sammana Sub-Tehsil of the Patiala district. It lies along the banks of the river Ghaggar and is subject to floods during summer. Jungle growths round about this block have already been cleared under the Land Reclamation Scheme of the Punjab Government. This small area of 1,500 acres could not be cleared because it was under floods when the neighbouring areas were being reclaimed. The jungle growth consists of *wan, dhak, karir,* etc. The soil is fine silty loam in texture and is practically free from salinity or alkalinity. Irrigation facilities are available in the area through wells and canals.

35. *Block* 6.—This block has about 350 acres and is situated in village Kheri Gujjar, Tehsil Sonepat, in the Rohtak district, near a low-lying old natural drain which is flooded during the rainy season. The land is infested with trees like *wan, dhak,* etc., and with shrubs and bushes. At present, it is utilised for grazing cattle and also serves as village forest. The texture of the soil is loam. No irrigation facilities are available in the area.

Nature and cost of reclamation measures

36. In category I the blocks offered for reclamation have great potentiality for food production as the lands in these blocks are productive and irrigation is available in most of the areas. The land will have to be reclaimed by means of tractors. The different steps in the process of reclamation are enumerated below :—

(*i*) *Jungle clearance.*—This operation is done in two stages, *i.e.*, clearance and windrowing.

(*ii*) *Ploughing* is done to a depth of 6 inches and this is considered sufficient for destroying weeds.

(*iii*) *Planking.*—In this operation, a plank is drawn over the ploughed fields and heavy clods are pressed and levelled. To some extent, the soil is pulverised and compacted.

(*iv*) *Harrowing* is done across the ploughed furrows. The clods are completely broken up, and the soil is pulverised, forming a fine seed bed.

37. In certain areas, levelling of the cleared land is done before ploughing, planking and harrowing operations are undertaken.

38. In the Karnal district, reclamation of the marshy land is being done by a private firm under contract with the Punjab Government. The contract rate for this work during 1959-60 was Rs. 115 per acre. An additional charge was made whenever a cultivator wanted his land to be levelled. The contract rates for the different operations are as under :—

	Rs. (per acre)
(*a*) Uprooting of trees and bushes to a depth of 1½ ft. below the ground-level, including stacking	65
(*b*) Ploughing to a depth of 6"	33
(*c*) Discing to a depth of 6"	17

(d) Levelling with tractors of—	Rs. (per hour)
(*i*) 101—200 H.P.	75
(*ii*) 50—100 H.P.	50
(*iii*) less than 50 H.P.	35

39. Taking into account the rising costs of machinery, spare parts, fuel, lubricants and wages, the cost of reclamation per acre for these areas is not likely to be less than Rs. 125 per acre during the Third Plan period. Since certain lands may require levelling also, an average figure of Rs. 140 per acre may be taken as the cost of reclamation for the purpose of working out the estimates. The total cost of reclaiming 41,850 acres in category I would be Rs. 58.59 lakhs.

40. In addition to jungle clearance, patches of land which have been affected by salinity or alkalinity, will have to be treated with suitable soil amendments, and by adopting proper manurial, cultural and other soil management practices, as discussed separately in the report.

41. The question of undertaking reclamation operations by a Government-owned tractor organisation *vis-a-vis* private firms was discussed with the officials of the Punjab Government, and their view was that the present system of getting the work done through contractors was quite satisfactory and should be continued as it allowed a full play of competition and the charges were not unreasonable. We were, however, given to understand that the tenders for contracts were called annually which invariably meant delays of three to four months each year in inviting tenders, fixing rates, etc. In our opinion, contracts for longer periods would enable private firms to plan their work more efficiently and would also result in greater output at lower costs.

CATEGORY II

42. In this category, 20 blocks comprising a total area of 99,800 acres have been located in the districts of Amritsar, Jullundur, Kapurthala, Ludhiana, Ferozepore and Gurdaspur, as per details given below :—

District	Name of Block	Block No.	Area (acres)
Amritsar	Patti	7	7,000
	Verowal	8	2,500
	Ajnala	9	15,000
Jullundur	Sangowal	10	3,000
	Talwan	11	3,000
	Rahon	12	3,000
Kapurthala	Kapurthala	13	10,000
	Sultanpur	14	11,000
	Bholath	15	7,000
	Phagwara	16	2,000
Ludhiana	Machhiwara	17	5,000
	Sidhwan Bet	18	6,000

contd.

District	Name of Block	Block No.	Area (acres)
Ferozepore	Ferozepore	19	6,000
	Jalalanbad	20	5,000
	Dharamkot	21	4,000
	Mallanwala	22	2,000
Gurdaspur	Dera Baba Nanak	23	800
	Talibpur	24	1,500
	Naushera	25	2,000
	Sri Hargobindpur	26	2,000

43. A general feature of these areas, which are locally known as *mund* or *bet*, is that they are mostly situated along the river banks and drain into natural streams which run parallel to the rivers for considerable distance and ultimately join the rivers. For example, Kirn or Sakki nallah runs parallel to the Ravi in the districts of Amritsar and Gurdaspur. A perennial stream known as Byne runs along the Beas in the districts of Hoshiarpur and Kapurthala. Similarly, a stream called Budha nallah runs along the river Sutlej through the districts of Ludhiana and Ferozepore. The main problem in these areas is that the nallahs are silted up and do not function satisfactorily as natural drains, with the result that most of the areas remain flooded and water-logged during the rainy season. The areas are generally covered with thick grass growth of *kahi, sarkanda,* etc., and can be cleared only with tractors. No irrigation facilities exist in most of the blocks.

44. Details regarding the location of each block, reclamation measures considered necessary, the cost of reclamation, etc. are discussed below, while further details are given in Appendix F.

45. *Block* 7 is situated west of village Harika-Pattan along the Sutlej. The area was flooded every year until the construction of a bund at Hari-ka-pattan (confluence of the Beas and Sutlej) two or three years ago. Although now free from floods, the land is low-lying and is infested with *jhau* grass and other weeds. The soil is sandy and well-drained, but is slightly alkaline. The sub-soil water, though not very saline, has some injurious salts in toxic amounts and a proper selection of crops for cultivation in the block will have to be made after reclamation is carried out. No irrigation facilities appear to be possible in the area and only the *rabi* crops can be raised. The reclamation of the area mainly involves weed clearance. The State Government has already taken up the work in some parts of the block through the agency of a private firm at a cost of Rs. 42 per acre.

46. *Block* 8 is located along the right bank of the Beas and forms part of the Khadur Sahib C.D. Block. A portion of the area is low-lying and is subject to floods in the rainy season. The soil is alluvium and varies from sandy to sandy loam. It is well-drained and is practically free from salinity or alkalinity. Irrigation facilities exist in a part of the Block, while in the remaining area, it can be provided by the construction of wells or tube-wells.

47. *Block* 9 is situated near village Ajnala south of the Ravi. It runs along the left bank of the river and is bounded on the south by the Sakki or Kirn nallah which flows almost parallel to the Ravi at a distance of 4-5

miles. The land is flooded during the rainy season and is becoming saline and alkaline. The following measures have been taken or are under contemplation to make these potentially fertile lands fit for raising crops :—

(*i*) An earthen bund has been constructed during the last few years along the left bank of the Ravi in its entire reach of about 80 miles, in order to provide flood protection to the area south of the bund.

(*ii*) Water-logging in this area is mainly the result of silting up of the Sakki (or Kirn) nallah which does not function satisfactorily during the rainy season. Proposals for remodelling this nallah in order to provide for effective drainage of the entire area are under investigation, but the expenditure involved is likely to be very heavy. In the meantime, steps are being taken by the State Irrigation Department for clearing the obstructions in the nallah and removing two or three prominent kinks in order to improve its flow. The estimated cost of these improvements was reported to be about Rs. 10 lakhs. In addition to these, the rail and road bridges across the nallah are being remodelled. In fact, the rail bridge has already been remodelled, and the construction of important road bridges is expected to be taken up shortly. When all these improvements are made, it is hoped that the drainage of the area will be considerably improved.

Although the State Government have offered only about 15,000 acres for reclamation in this block, the clearance of the nallah will benefit the entire area lying between the bund and the nallah. The Director, Irrigation & Power Research Institute, Amritsar, has estimated the cost of effective anti-waterlogging and drainage measures in this area at Rs. 500 per acre, but it may not be necessary to incur this expenditure if the proposed clearance of the nallah is properly carried out. The over-all cost of anti-waterlogging and drainage measures in this area will obviously depend upon the extent of the area to be taken up for reclamation as the greater the area for reclamation, the less will be the cost per acre.

(*iii*) Measures for reclaiming the saline and alkaline lands as recommended under category III will need to the undertaken in order to bring the area under cultivation.

(*iv*) The land of the block is fairly even, but is infested with *sarkanda*, the removal of which will require the use of tractors. The cost of tractorisation will be Rs. 50 per acre.

(*v*) During our discussions with the Superintending Engineer, Upper Bari Doab Canal Circle, we were informed that a proposal was being considered for providing irrigation in the block by the extension of the existing Ramdas Minor. The Deputy Commissioner, Amritsar, with whom these proposals were further discussed, did not appear to favour them on the ground that their adoption might aggravate the water-logging problem. He suggested that pumping water from shallow wells should prove more useful. The cultivators, however, were keen on gravity canal irrigation because of its low cost. If adequate drainage is provided, there may not be much danger of waterlogging due to canal irrigation.

48. *Blocks* 10, 11 & 12. These blocks lie on the right bank of the Sutlej and extend from village Rahon to Lohian. The soil is sandy to sandy loam. Reclamation work is in progress in these blocks, and 7,000 acres have been cleared and brought under cultivation at a cost of Rs. 42 per acre.

49. *Blocks* 13, 14 & 15. These blocks are situated between a perennial stream called Byne and the left bank of the Beas. The soil is loamy to clay

loam. Salt incrustation is visible at the surface and there are quite a large number of patches where no vegetation is seen. The area is subject to floods during the rainy season. An earthen bund has been constructed along the left bank of the Beas in the Kapurthala district, and this has afforded protection from floods. Like the Kirn nallah, Byne stream also requires to be cleaned and kept in a proper state of maintenance. Ameliorative measures against salinity and alkalinity are also needed. About forty tube-wells have already been sunk in the area, and irrigation facilities are thus assured.

50. *Block* 16 is situated in the Phagwara Tehsil. The soil is heavy in texture and mostly alkaline. The reclamation measures needed are weed clearance and dealkalinisation.

51. *Block* 17 is located along the Budha nallah in about 12 villages extending from Chah Lohat to Milkowal. The soil near the river is sandy loam to loam, while away from the river bank it is loam to clay and is poorly drained. No irrigation facilities exist at present, but can be made available by construction of wells and tube-wells.

52. *Block* 18 is also situated along the Budha nallah towards the left bank of the Sutlej. The area is low-lying and is subject to floods during the rainy season. The soil is alluvium, and as in other 'bet' areas, patches of saline and alkaline lands exist here and there. With the completion of the Bhakra Canal system, the danger of floods in the Sutlej will be eliminated to a large extent. Clearing of the Budha nallah and its proper maintenance will provide effective drainage for the entire area. In addition, weed clearance and the adoption of ameliorative measures for salinity and alkalinity would be necessary. Irrigation can be provided from the Sidhwan canals.

53. *Block* 19 extends from village Jamal Singhwala to village Mamdot and is spread over an area of one to two miles in width along the left bank of the Sutlej on the Indo-Pakistan border. Soil varies from sandy loam to loam with patches of saline and alkaline lands. The area is subject to floods during the rainy season.

54. *Block* 20 is located in about four village near Jalalanbad along the left bank of the Sutlej. This block is similar in all respects to block 19.

55. *Blocks* 21 *and* 22 are located in the Zeera Tehsil of the Ferozepore district, and are similar to blocks 18, 19 and 20.

56. *Block* 23 lies between the Kirn nallah and the Ravi. It is contiguous to block 9 described above, and has similar problems of reclamation.

57. *Blocks* 24, 25 *and* 26 lie along the right bank of the river Beas in a long strip of 1 to 2 miles in width from Sausher to Sri Hargobindpur. The areas are subject to floods during the rainy season. The soil varies from sandy to sandy loam. No irrigation facilities exist in the area.

58. To sum up, the areas offered in this category generally require the following treatments in order to make them fit for cultivation :—

(*a*) Clearance of weeds
(*b*) Provision of adequate drainage,
(*c*) Removal of salinity and alkalinity, and
(*d*) Provision of irrigation facilities.

59. The total expenditure on the clearance of weeds alone will work out to Rs. 49.90 lakhs at the rate of Rs. 50 per acre. For providing adequate

drainage to the areas, the three nallahs, namely, Sakki, Byne and Budha require to be cleaned, deepened and properly maintained for which a sum of Rs. 30 lakhs may be necessary. By incurring this expenditure, it is true that large areas already under cultivation would also be benefited in addition to the areas proposed for reclamation. In view of this consideration, it may not be correct to charge the entire expenditure to the reclamation account. But, for the purpose of working out the total cost of reclamation, we have assumed the figure as such. The cost of measures for the removal of salinity and alkalinity will obviously depend upon the spread of the affected areas in the different blocks. In the absence of a soil survey, it is not possible to indicate the exact cost of reclamation on this account. But, we were given to understand that 30 per cent of the area may be affected by salinity or alkalinity, requiring an expenditure of about Rs. 300 per acre for their removal. The cost of these measures for the entire area will work out to Rs. 89.82 lakhs.

60. As regards the provision of irrigation facilities, we are of the opinion that the expenditure on this account cannot be a right charge on reclamation and that it should be treated as an item of developmental expenditure.

61. Thus, the total expenditure on reclamation of 99,800 acres in category II would work out as under :—

	Rs. (lakh)
(*a*) Clearance of weeds	49·90
(*b*) Provision of drainage	30·00
(*c*) Removal of salinity and alkalinity	89·82
TOTAL	169·72

The average cost of reclamation would be Rs. 170 per acre.

CATEGORY III

62. The distribution of wastelands in this category in different districts is as given in the statement below :—

District	Extent of areas in large blocks of alkaline/saline land	
	with low water-table	with high water-table
	acres	acres
Hissar	—	15,000
Rohtak	—	10,000
Amritsar	—	50,000
Jullundur	1,000	4,000
Kapurthala	—	35,000
Ludhiana	3,000	5,000
Ferozepore	—	30,000
Gurdaspur	—	5,000
Gurgaon	—	5,000
TOTAL	4,000	1,59,000

N.B. The above figures are approximate.

63. No further details in respect of wastelands affected by salinity and alkalinity were made available to the Committee.

64. According to the survey conducted by the Director, Irrigation & Power research Institute, Amritsar, the total area affected by salinity, alkalinity, or both in the Punjab is about 3 million acres. It is, however, not known how much of this area is lying waste and is available in fairly large blocks. Further, according to this survey, 15,000 to 20,000 acres of fertile land are going out of cultivation every year on account of salinity, alkalinity and waterlogging. This indicates the magnitude of the problem of *kalar* or *usar* lands and the necessity for taking suitable measures.

65. Experiments on the reclamation of saline and alkaline lands have been conducted by the Irrigation and Power Research Institute, Punjab, and by the Punjab Agriculture Department at the Nilokheri Farm, in the Karnal district, with high water-table, and at the Kamma Farm, in the Ludhiana district, with low water-table. Further research on the reclamation of such lands is in progress. The following methods of reclamation can be recommended for general adoption by the cultivators :—

(*i*) Where the water-table is within 5 feet, steps should be taken to drain out the excess water.

(*ii*) As a first step in the reclamation of affected lands, strong bunds about 2 ft. in height should be constructed all round the fields.

(*iii*) If pH of the soil is about 10, four tons of gypsum or press-mud should be ploughed well into the affected land. (This quantity can be varied according to the nature of the soil).

(*iv*) The field should then be heavily irrigated so as to allow gypsum to react with the soil and leach down the salts.

(*v*) When the field is in *watar* (*i.e.*, in optimum condition of soil moisture), *dhaincha* (*Sesbania aculeata*) seed should be sown broadcast in the second week of March at the rate of 20 to 30 lbs. per acre. The seed should be soaked in water for 4—6 hours before sowing so as to promote quick germination. About 2 to 3 maunds of sulphate of ammonia and an equal quantity of super-phosphate should be applied before sowing. Frequent light irrigations should be given so as to avoid injury to small seedlings.

(*vi*) When *dhaincha* plants are 8—10 weeks old, they should be ploughed into the field as green manure.

(*vii*) About 1-2 weeks after green manuring, paddy should be transplanted in the field. Sulphate of ammonia should be applied at the rate of 3 maunds per acre at the time of transplanting.

(*viii*) After paddy is harvested, a crop of *senji*, barley or berseem (as forage crop) should be grown in the field.

(*ix*) Where paddy cannot be grown, *dhaincha* should be sown in the rains and ploughed in as green manure in early September. Thereafter, barley should be sown.

(*x*) The above process should be repeated the next year but without the addition of gypsum or press-mud to the field.

(*xi*) The soil should be analysed at the commencement of the reclamation and again after two years in order to find out the effect of the above treatment.

66. The application of farmyard manure to these degraded lands helps to restore their productivity. Equally good results have been obtained with fertilizers, the application of which is also economical. Crops like sugarbeet can be grown with advantage on these lands. A suitable cropping pattern for these lands is *dhaincha* (as a green manure crop) followed by rice, barley or wheat (or sugarbeet or berseem). The old method of flooding the land in order to leach out salts followed by the cultivation of paddy has not been found effective. After reclamation, it is not advisable to grow paddy continuously as these lands have a tendency to become waterlogged.

67. The cost of reclamation of degraded alkaline or saline lands is Rs. 250 per acre when the water-table is low. In the case of high water-table, the reclamation cost may be as high as Rs. 500 per acre because of the heavy expenditure on drainage. Considering that 50,000 acres out of the total area of 1,63,000 acres affected by *kalar* are reclaimed during the Third Plan period, the expenditure on this account will be Rs. 2.4 crores. This can be met partly from the provision of Rs. 6 crores (provisional) made for the reclamation of saline and alkaline lands by the Ministry of Food and Agriculture, and partly from the amount earmarked for drainage and anti-waterlogging measures out of the total provision of Rs. 80 crores made for flood control, drainage, anti-waterlogging and anti-sea erosion by the Ministry of Irrigation and Power.

68. We strongly recommend the setting up of pilot projects in the districts where the problem of salinity and alkalinity is acute, so as to demonstrate to the cultivators practical methods of reclaiming affected lands. It may also be necessary to make provision for the supply of *dhaincha* seeds for green manuring and fertilizers and manures to the cultivators at subsidised rates. Further, there is an imperative need for research on cheap materials for drainage, depth and spacing of tile drainage and their economics, as it is felt that in areas with high water-table, unless cheap methods of improving drainage are introduced, reclamation measures may not be adopted by the cultivators as a regular practice.

69. In the Punjab, canal irrigation has aggravated the problem of waterlogging of the soil. The evil consequence of waterlogging is the development of salinity and alkalinity in the cultivated lands, which render them unproductive in a few years. The problem of reclamation of these lands is, therefore, connected with the study of the soils from the point of view of their structure, permeability and the nature and contents of the salts in the soil profile. For these studies it is necessary that a competent soil scientist should be associated with the irrigation engineer. We were informed by the State representatives that adequate provision for soil studies had been made both by the Agriculture Department and the Department of Irrigation, and that these facilities were being further strengthened in the Third Five Year Plan. We were glad to know that the importance of conducting soil studies in connexion with the reclamation of waterlogged lands had been recognised by the State Government.

CATEGORY IV

70. Eroded wastelands are mostly found in the hilly parts of the districts of Gurdaspur, Hoshiarpur, Ambala, Kangra and Gurgaon. The soils are sandy loam to sandy in texture and are extremely poor in fertility. Owing to reckless felling and uncontrolled grazing, the susceptibility of these lands to erosion has considerably increased. For their improvement, measures such as contour bunding and terracing are essential. Since cultivation in these areas is mostly 'barani', there is need to evolve a suitable system of dry farming in order to check further deterioration of the soil. We were given to understand that the Department of Agriculture proposes to launch an intensive programme of soil conservation on the agricultural lands of this tract, but the success of this programme will mainly depend upon the pattern of financial assistance to the cultivators for carrying out improvements on their holdings.

71. We recommend that the pattern of financial assistance on the Bombay model may be adopted for sharing the expenditure on contour-bunding and the introduction of dry farming methods of cultivation. According to this pattern, 25 per cent of the expenditure on counter-bunding is treated as subsidy to be shared equally between the Centre and the State Government, and the balance is advanced as loan to the cultivator to be recovered in equal annual instalments spread over a period of 10 to 15 years. Assuming that the State Government will set up an effective organisation for undertaking soil conservation measures on eroded lands, it may be possible to cover 25,000 acres per year. The total cost of contour bunding an area of 1,25,000 acres over a period of five years will amount to Rs. 75 lakhs. This expenditure can be met from the provision of Rs. 56 crores made by the Ministry of Food and Agriculture for projects on contour-bunding of agricultural lands under the head 'Soil Conservation'

CATEGORY V

72. There are large areas of wastelands under sand dunes in the arid tracts in the districts of Gurgaon, Mohindergarh, Hissar, Bhatinda and Ferozepore. Although no information regarding the actual extent of wastelands in this category in the different districts is available, it is gathered that in the Hissar District alone about 4 lakh acres are lying waste, particularly in South Hissar, Loharu, Bhawani and adjoining areas. Similarly, in the areas adjoining Rajasthan, large tracts of sand dunes re-reported to be available in the district of Bhatinda, Ferozepore, Mohindergarh and Gurgaon. The main problems of these areas are (*a*) wind erosion, (*b*) lack or irrigation facilities, (*c*) brackish sub-soil water, and (*d*) poor soil fertility.

73. For successful reclamation of these lands, it is necessary to undertake soil conservation measures, such as planting of wind-breaks, growing of suitable shrubs and grasses for stabilisation of sands, improvement of soil fertility by the introduction of suitable crops, and provision of irrigation facilities. Research on the methods of improving the quality of brackish water has also to be conducted so as to enable the utilisation of the sub-soil water. It is estimated that the reclamation of such lands will cost about Rs. 500 per acre.

SECTION C

(Disposal of reclaimed lands for cultivation)

Nature of ownership of wastelands and their disposal for cultivation

74. In this Section, we deal with the various measures needed for the disposal and development of wastelands which have been located in the State. It is obvious that the measures required for the purpose would primarily depend upon the nature of ownership of wastelands. In the State of Punjab, the wastelands are owned by the following:—

(1) Private individuals,

(2) Government (*Nazool* lands).

(3) Custodian of Evacuee Property, and

(4) Village Panchayats.

75. A statement showing the breakdown of wastelands according to their ownership in respect of categories I and II is given in Appendix G. Similar information for the remaining categories of wastelands, *i.e.*, categories III, IV and V was not furnished to the Committee. It would be observed from the statement that most of the lands in category I belong to private individuals, while those in category II are mostly either privately-owned or are under the control of the Custodian of Evacuee Property. Only a very small percentage of the wastelands belongs to the Government and the village panchayats. The problems involved in the disposal of wastelands in each category of ownership are discussed below :—

75.1. *Private lands.*—Under the existing Land Reclamation Scheme of the State Government, wastelands belonging to private individuals, are handed over, after reclamation, to the respective owners for follow-on cultivation. The reclamation charges together with the interest thereon are recovered in sixteen half-yearly instalments. We were informed that there had been no difficulty in recovering the reclamation charges and that the entire area was brought under cultivation immediately after reclamation. In view of this, the State Government feels that there is no necessity for undertaking any resettlement operations in these areas. We agree with this view.

75.2. *Government lands.*—As regards wastelands belonging to Government (*Nazool* lands), these lands are returned, after reclamation, to the Deputy Commissioners of the districts concerned for arranging follow-on cultivation. The instructions framed for the allotment of these lands to the backward classes may be seen in Appendix H. Allotments are made either to individuals or to the co-operative societies, and no colonisation projects are contemplated by the State Government. There appears to be some delay in the allotment of lands after reclamation on account of the complicated procedure involved. Such delays should be avoided as these often result in the loss of one year's crop.

75.3. *Custodian of Evacuee Property lands.*—Evacuee lands, after the completion of reclamation work, are returned to the Custodian of Evacuee

Property who has to arrange for their follow-on cultivation either by permanent allotment or by temporary lease. The present rules do not provide for a lease of more than one year and no allottee comes forward to cultivate these lands for such a short period. A sizeable percentage of such lands which had been reclaimed in the past few years, has remained out of cultivation for this reason. In order to ensure proper follow-on cultivation, the creation of some sort of ownership is necessary. We learn that the Punjab Government are already in correspondence with the Government of India for acquiring all evacuee lands on a permanent basis for the resettlement of landless peasants, ex-servicemen, Rai Sikhs, etc., A copy of the scheme for resettlement may be seen in Appendix I. The Committee is in agreement with the proposed scheme for the allotment of evacuee lands, but would like to make the following suggestions in this connection:—

(*a*) Clause (20) of Schedule B of the scheme stipulates that the tenant shall not use the said lands or any part thereof in a manner which renders them unfit for the purpose for which he holds them, and shall bring one-half of the cultivated area thereof under cultivation within three years from the date of commencement of the tenancy and the whole of it similarly reckoned within five years from the same date, and thereafter he shall keep the said lands under cultivation to the extent of one-half thereof during each harvest. No penalty has, however, been proposed for non-fulfilment of this clause, and this seems to be necessary.

(*b*) The conferment of the ownership rights on the tenants should be done only when the Government are satisfied that the cultivation was being carried on efficiently.

(*c*) Schedule A giving particulars of the lands which are proposed to be allotted does not seem to cover all evacuee lands now proposed for reclamation. It is necessary that the scheme should be made applicable to all the evacuee lands proposed for reclamation.

(*d*) In the case of areas located along the border of West Pakistan the following concessions and facilities may be offered by the State Government:—

(*i*) Land reclamation charges may be borne by the State.

(*ii*) Suitable subsidy may be given for sinking wells, purchase of bullocks, fertilizer, seed and construction of houses.

75.4. *Village Panchayat lands.*—These lands, after reclamation, are given back to the village panchayats for arranging follow-on cultivation. Past experience has shown that the panchayats have invariably failed to arrange for proper follow-on cultivation with the result that the benefits of reclamation have not been realised. The Committee understands that the Punjab Government have now set up a separate Directorate for the effective management of common lands. It is hoped that this department will quickly draw up plans for resettlement and follow-on cultivation of these lands.

Suggestions for effective utilisation of wastelands.

76. Having dealt with the disposal of wastelands, we consider it necessary to make a few suggestions for their effective utilisation. We

are of the view that the success in the utilisation of wastelands is achieved only if reclamation is followed by suitable follow-on cultivation operations.

77. A detailed soil survey for land-use should be carried out in each are proposed for reclamation so that the requisite information on the proper utilisation of land is available. The State Government can apply for final assistance for conducting these surveys to the Central Soil Conservation Board.

78. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas, so that the lands are put to the best use. The extension staff of the Community Development Department can play a useful part, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites. As most of the areas offered for reclamation are now covered by the C.D. Blocks, the Block funds should be available for the above purpose.

79. In view of the large-scale reclamation work to be undertaken in the State, we suggest that this work may be entrusted to a full-time, senior officer who should be made responsible for the following:—

(*a*) preparation and execution of land reclamation schemes,

(*b*) ensuring proper follow-on cultivation operations in the reclaimed areas with a view to improving the productive capacity of the reclaimed lands,

(*c*) to augment facilities for the supply of irrigation water to the reclaimed areas, to arrange for loans for the purchase of pumping sets, construction of wells, tube-wells, etc. in the reclaimed areas, and

(*d*) to help in the allotment of wastelands to individuals and co-operative societies.

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80. Since practically no irrigation facilities exist in the *bet* areas, construction of shallow wells may be encouraged by the grant of subsidy and loans on a liberal scale to the cultivators.

81. The *bet* lands are very fertile, but they are infested with pernicious weeds and grasses which are difficult to eradicate unless facilities for mechanical cultivation are made available to the cultivators. Ordinarily it would not be within the reach of a cultivator to own a tractor, and we would, therefore, recommend that the State Government should set up tractor stations to be managed by private tractor companies. The tractor stations should be located at strategic places in *bet* areas, so that cultivators may not experience much difficulty in hiring tractors and tractor-implements for ploughing, harrowing and other farm operations. The most important benefit of the tractor stations would be that quick, efficient and timely follow-on cultivation operations, which have a very beneficial effect on crop yields, would be ensured. We also suggest that the cultivators should be encouraged to purchase tractors by the grant of loans recoverable in easy instalments.

82. *Bet* lands are inundated by river floods which are an annual feature of the riverain areas. In order to protect these lands from flood hazards and to prevent the erosion and under-cutting of the river banks, it is

suggested that a belt of thick growth of trees and grasses, about 1,000 ft. in width, should be established along the river banks.

83. The general crop patterns of the lands in the different categories are as under:—

83.1. *Category I.*—The blocks selected for reclamation in this category are situated in the districts of Karnal, Hissar, Patiala and Rohtak. On irrigated lands, double cropping is practised in these districts. Suitable crop rotations are in vogue, which also include the cultivation of forage crops like berseem, *senji,* etc. The principal *kharif* crops are paddy, maize, cotton, pulses and fodder jowar, and the important crops grown in the *rabi* season are wheat and gram. In the Karnal district, paddy is extensively grown, while sugarcane is an important cash crop in the districts of Rohtak and Karnal.

83.2. Single cropping is the general rule in *barani* cultivation. If the soil is good, wheat or a mixture of wheat and gram is sown. Gram is generally grown on light sandy soils. Mustard is sown mixed with wheat or gram.

83.3. *Category II.*—The bet lands are found in the riverain tracts of Amritsar, Jullundur, Kapurthala, Ferozepore and Gurdaspur. Surgarcane is an important crop of this tract, and there are great possibilities of extension of cultivation of this crop. Where the water-table is not high, both *kharif* and *rabi* crops grow well. Among the oilseeds, sesamum is extensively cultivated in the Amritsar and Gurdaspur districts, either as a pure crop or mixed with other crops.

83.4. *Category III.*—A cropping pattern for saline and alkaline lands, as recommended by the Punjab Agriculture Department, is *dhaincha* (as a green manure crop) followed by rice, barley or wheat (or sugarbeet or berseem). After reclamation, it is not advisable to grow paddy continuously on these lands as they are prone to become waterlogged.

83.5. *Category IV.*—In the hilly areas of the sub-mountane tract, wheat and maize are extensively cultivated. Rice, mustard and lentils are also grown. Barley is the principal *rabi* crop in the Gurgaon district.

83.6. *Category V.*—Sand dunes or arid tracts are more suitable for pastures. *Bajra* is the principal millet of this area. *Taramira* is grown in Hissar, Ferozepore, and Mohindergarh. *Mung* is grown as a mixture with *bajra* in the Hissar district. *Moth* is cultivated in the Ferozepore and Hissar districts.

Economic aspects of reclamation

84. We shall now examine the economic aspects of reclamation in terms of the addition to food production with reference to the expenditure involved. At present, no reliable figures of additional yields of crops grown in the areas where land reclamation work has already been done, are available. We, therefore, recommend that crop-cutting surveys should be conducted in the reclaimed areas during the Third Five Year Plan in order to have an accurate idea of the additional food production due to the land improvement measures. Our visits to some of the reclaimed areas where crops had been grown, have, however, given us a fairly good

idea of the potentialities of the areas proposed for reclamation in categories I and II, and we feel that, on a conservative estimate, the figures of annual additional food production per acre (if other crops are grown, their equivalents in terms of food crops) may be assumed as under:—

Category I	..	20 mds
Category II	..	10 mds

85. In this connection, it may be noted that most of the areas in category I have perennial irrigation and are capable of producing two crops in the year. In category II, the lands are fertile, but a large proportion of them has no assured irrigation supply and only seasonal crops can be grown.

86. As regards the lands in category III, results of experiments have shown that these lands can be made productive after the first two years of the treatment described in para 65. An estimated yield of 20 maunds of paddy per acre has been obtained in the reclaimed lands. For the purpose of calculations, we have assumed the figure of 1·5 maunds per acre.

87. The eroded wastelands in category IV are found in the hilly areas of Kangra, Gurdaspur, Hoshiarpur and Ambala, which receive a rainfall of 40″ to 70″. The average yield of wheat in these districts ranges from 586 lb. to 716 lb., and that of maize from 592 lb. to 1, 205 lb. per acre (*vide* Appendix D). Although these lands are poor in fertility, a well-planned programme of soil and water conservation will rehabilitate them in a few years. For our present purpose, we may assume a yield of 5 maunds per acre as a result of soil conservation measures.

88. The lands in category V are located in tracts of low and variable rainfall. Results of experiments conducted in the past have shown that the adoption of a suitable dry farming system of cultivation increases the yield of *bajra*, which is the principal crop of the arid tracts, by one to two maunds per acre.

89. In order to assess the relative economic benefits of reclamation between the different categories of reclaimable lands, it is necessary that the figures of estimated additional food production should be studied in relation to the costs of reclamation as worked out in the previous section. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional food production.

TABLE I

Cost of reclamation of land in different categories and estimated additional production

Category	Description	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs. lakhs)	Additional production per acre (maunds)	Total additional production (maunds)	*Value of total additional production (Rs, lakhs)	Value of additional production acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I	Lands over-grown with jungle and shrubs	41,850	140	58·59	20	8,37,000	100·44	240	7
II	*Bet* or riverine lands	99,800	170	169·72	10	9,98,000	119·76	120	17
III	Saline and alkaline lands	4,000	250	10·00	15	7,50,000	90·00	180	17
		(a) 46,000	(a) 500	(a) 230·00					(a) 33
IV	Eroded lands	(b) 1,25,000	(b) 60	(b) 75·00	5	6,25,000	75·00	60	(b) 12
V	Sand dunes or arid tracts	—	500	—	2	—	—	12	250
	TOTAL ..	3,16,650		543·31		32,10,000	385·20		

'a' for areas with low water-table.

'b' for areas with high water-table.

* (*i*) The main food crops of the areas included in categories I to IV are wheat, paddy, maize and gram. A common price of Rs. 12 per maund is assumed.

(*ii*) The crop of the areas in category V is *bajra*, for which the price of Rs. 6 per maund is taken.

90. It will be seen from the table that the cost of reclaiming 3,16,650 acres of land in categories I to IV cores to about Rs. 5.43 crores, *i.e.*, about Rs. 171 per acre. The estimated additional production from the reclaimed land is 32,10,000 maunds (1,17,500 tons), valued at about Rs. 3.85 crores, In terms of additional production, therefore, the average cost of reclamation per acre is economic, since the total expenditure involved can be recovered in two crop seasons.

91. As regards the cost of reclamation of lands in the different categories, category IV offers the greatest promise for increasing agricultural production since the cost of land improvement is the lowest, and there are also large areas of eroded lands where contour-bunding combined with dry farming methods of cultivation can produce quick and beneficial results for the needy sections of the farming community. In spite of these advantages, we have recommended that contour-bunding operations may be undertaken in only 1,25,000 acres out of about 2 million acres of eroded lands, because the State Department of Agriculture has at present no staff specially trained for undertaking this work on agricultural lands, and it will take some time before a really effective organisation for soil conservation can be built up in the State. In terms of the additional production per acre, however, the lands in category I seem to be the most promising, followed by the lands in categories III and II. The lands in category I can produce, on an average, 20 maunds of foodgrains, and, as these lands can give economic returns to pay off the cost of reclamation even in one crop season, they should receive a very high priority in the reclamation programme of the State. As regards category V, we consider that our present financial resources will not permit us to make large investments on lands which are situated in tracts of precarious rainfall, and where the returns are not expected to be commensurate with the heavy expenditure involved.

92. The benefits of reclamation should not be measured mainly in terms of additional food production, but should be viewed from the social angle as well. The conversion of jungle lands which are normally the abode of dacoits and anti-social elements, into prosperous farms and settlements solves the problem of law and order in these areas and also helps in the rehabilitation of the poorer sections of the communty, like the landless labourers, scheduled castes and tribes, backward classes, refugees, etc. Another benefit of reclamation is the utilisation of irrigation water to a greater extent. Further, new areas are opened up and new avenues of employment are made available to the community. In many places, roads are constructed in order to meet the needs of the growing population and for the transport of the agricultural produce to the market. These are but a few of the many lasting benefits that accrue from a well-planned programme of reclamation.

Priorities between different categories of reclaimable lands

93. We now proceed to discuss the question of assigning priorities between the different categories of reclaimable lands. The answer to this question will be found in what has already been stated in this section.

94. We recommend that the wastelands included in category I may be assigned the top-most priority. Amongst the various blocks offered for reclamation included in this category, those in the districts

of Karnal, Hissar and Patiala may be taken up first, followed by the block in the Rohtak district which has, at present, no irrigation facilities.

95. Next in the order of priority are the degraded lands in category IV. The cost of land improvement in their case is the lowest among all the categories of wastelands, and there are also vast areas which can be quickly reclaimed if a suitable organisation is set up in the State. The cost of reclamation per maund of foodgrains produced (*vide* last column of Table I) is also lower in this category than in categories II and III. We would, therefore, recommend that the rehabilitation of degraded lands should be assigned a very high priority, and that soil and water conservation measures should be undertaken on at least 1,25,000 acres over the next five years.

96. As regards category III, the extent of the area to be reclaimed during the Third Plan period has been indicated in para 67. We are, however, not in a position to indicate as to what should be the order of priorities among the different areas as this will mainly depend upon the execution of drainage and anti-waterlogging schemes and the priorities assigned to them by the State Government in the Third Plan. At the same time we suggest that the State Government may conduct a rapid survey of the areas affected by salinity and alkalinity, and select only such areas for reclamation as have low water-table, or where reclamation can be carried out in large-sized blocks at a comparatively less cost.

86. 1. As regards the lands with high water-table, the cost of reclamation does not seem to be within the reach of an ordinary cultivator, but if the work is organised on a co-operative basis over large areas, the cost can be considerably brought down. Considering the extent of damage caused to cultivated lands by salinity and alkalinity in the Punjab, the importance of reclamation of these lands cannot be over-emphasised. We, therefore, recommend that the reclamation of saline and alkaline lands with high water-table should receive particular attention of the State Government, although the cost of reclamation, including the cost of drainage, seems to be the highest among the categories I to IV.

97. The *bet* or riverine areas included in category II may be assigned the lowest priority in view of the fact that these lands, although fertile and capable of producing good crops under favourable conditions, are subject to flood hazards, which make cultivation in these areas rather precarious. However, if the recommendations made by us in paras 80, 81 and 82 are adopted, these lands may prove to be an important source of agricultural production. As regards priorities within this category, it is difficult to make any suggestions as the choice of the areas for reclamation in this category will primarily depend upon the drainage and irrigation schemes that may be taken up during the Third Plan period.

98. The question of reclamation of sand-dunes (category V) should be taken up only when irrigation is available in the areas. The cost of reclamation is quite heavy and the returns are not commensurate with the expenditure involved. These lands are more suited for the development of pastures, and until irrigation is available, they should not be utilised for arable cultivation, except the flat areas where dry farming can be practised.

SECTION D

(Summary of general conclusions and recommendations)

1. The total extent of wastelands in the Punjab, according to the land utilisation statistics of 1957-58, is 2.06 million acres classified as "other uncultivated lands excluding fallows" (2.05 million acres), and "fallows other than current fallows" (0.01 million acres). Of this area of 2.06 million acres, 3.04 lakh acres have been located in the State for reclamation in blocks of the sizes of 250 acres or more.

(Paragraph 20)

2. The wastelands found in the State may be classified into the following five categories :—

I—Lands infested with thick growth of jungle, bushes and shrubs,

II—Lands lying along the banks of the rivers, and infested with pernicious weeds and grasses,

III—Saline and alkaline lands,

IV—Eroded lands, and

V—Sand dunes or arid tracts.

(Paragraph 24)

3. The distribution of wastelands in categories I to III is as under :—

Category	*Area* (acres)
I	41,850
II	99,800
III	1,63,000

In addition, 2 million acres in category IV and 4 lakh acres in category V are reported to be available for reclamation, but their distribution in large-sized blocks is not known.

(Paragraphs 25 and 26)

4. The blocks offered for reclamation in category I have great potentiality for food production as the lands in these blocks are fertile and irrigation is available in most of the areas. The cost of reclamation is estimated at Rs. 140 per acre. The total cost of reclaiming 41,850 acres would be Rs. 58. 59 lakhs.

(Paragraphs 36 and 39)

5. The system of getting the jungle clearance work done through contractors has proved quite satisfactory and should be continued. However, the practice of awarding contracts on an annual basis has resulted in delays in the execution of work. It is suggested that contracts should be given for longer periods than one year, so as to enable the contracting companies to plan their work more efficiently. This procedure will result in greater output at lower costs.

(Paragraph 41)

6. The areas in category II are mostly situated along the river banks. The main problem of these areas is that the nallahs are silted up and do

not function satisfactorily as natural drains, with the result that most of the areas are waterlogged and have consequently been rendered saline and alkaline. The areas are covered with thick grass growth and can be cleared only with tractors. Practically no irrigation facilities exist in most of the blocks.

(Paragraph 43)

7. The total expenditure on the reclamation of 99,800 acres in category II works out as under :—

	Rs. (lakhs)
(*a*) Clearance of weeds	49·90
(*b*) Provision of drainage	30·00
(*c*) Removal of salinity and alkalinity	89·82
TOTAL	169·72

The average cost of reclamation would be Rs. 170 per acre.

(Paragraph 61)

8. The total area of saline and alkaline lands available in large-sized blocks is 1,63,000 acres. The cost of reclamation of these lands is Rs. 250 per acre when the water-table is low, and Rs. 500 when the water-table is high. It is suggested that at least 50,000 acres of affected land may be taken up for reclamation during the Third Five Year Plan period. The total cost of reclamation will be Rs. 2.4 crores.

(Paragraphs 62 and 67)

9. The methods of reclamation of the lands affected by salinity and alkalinity have been investigated by the Punjab Agriculture and Irrigation Departments, and suitable recommendations have been made. Pilot projects should be set up in the districts where the problem of salinity and alkalinity is acute, with a view to demonstrating to the cultivators the practical methods of reclaiming the affected lands. Provision should also be made for the supply of *dhaincha* seeds to the cultivators at subsidised rates.

(Paragraphs 65 and 68)

10. In the reclamation of lands affected by salinity and alkalinity, it is essential that the physical and chemical properties of the affected lands should be studied with a view to devising suitable methods of reclamation. It is, therefore, necessary that a competent soil scientist should be associated with the irrigation engineer. We were glad to note that the State Government was fully aware of the importance of soil investigation in connection with the reclamation of waterlogged lands.

(Paragraph 69)

11. Eroded wastelands are mostly found in the hilly tracts of the districts of Gurdaspur, Hoshiarpur, Ambala, Kangra and Gurgaon. For their improvement measures such as contour-bunding and terracing are essential. There is need to evolve a suitable dry farming system of cultivation in order to check further deterioration of these lands. It is recommended that soil and water conservation measures may be undertaken on at least 1,25,000 acres over a period of five years. The cost of these measures will be Rs. 75 lakhs. Of the expenditure on contour-bunding, 25 per cent may be given as subsidy to the cultivators and the

balance treated as loan to be recovered in equal annual instalments spread over a period of 10 to 15 years.

(Paragraphs 70 and 71)

12. The wastelands in the State are owned either by private individuals, the Government, the Custodian of Evacuee Property, or village panchayats. The lands owned by private individuals are brought under cultivation immediately after reclamation. There appears to be some delay in the allotment of Government lands after reclamation on account of the complicated procedures involved. It is suggested that such delays should be avoided as far as possible.

(Paragraphs 74, 75.1 and 75.2)

13. As regards the evacuee lands, these are returned, after reclamation, to the Custodian of Evacuee Property, who arranges for their follow-on cultivation either by permanent allotment or by temporary lease. The present rules do not provide for lease of more than one year and no cultivator comes forward to cultivate these lands for such a short period. It is suggested that the Punjab Government should allot the evacuee lands on a permanent basis for the resettlement of the landless peasants, ex-servicemen, Rai Sikhs, etc., in accordance with the scheme drawn up by the State Governments.

(Paragraph 75.3)

14. Lands belonging to the village panchayats are not allotted for follow-on cultivation immediately after reclamation. The State Government has set up a Directorate for the effective management of common lands, and it is hoped that this Directorate will quickly draw up plans for the resettlement and follow-on cultivation of these lands.

(Paragraph 75.4)

15. Detailed soil surveys for land use should be carried out in each area proposed for reclamation, so that the requisite information on the proper utilisation of land is available.

(Paragraph 77)

16. The staff of the Agriculture Department should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas so that the lands are put to the best use. The extension staff of the Community Development Department can play a useful role in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisities.

(Paragraph 78)

17. In view of the large-scale reclamation work to be undertaken in the State, the work of land reclamation may be entrusted to a full-time senior officer who should be responsible for ensuring proper follow-on cultivation in the areas reclaimed, and for helping in the allotment of wastelands to individuals and co-operative societies.

(Paragraph 79)

18. Since practically no irrigation facilities exist in the *bet* areas, construction of shallow, open wells may be encouraged by the grant of subsidy and loans on a liberal scale to the cultivators.

(Paragraph 80)

19. The *bet* lands in category II are infested with pernicious weeds and grasses which are difficult to eradicate unless facilities for mechanical cultivation are made available to the cultivators. The State Government should set up tractor stations to be managed by private tractor companies, so that the cultivators may be able to hire out tractors and tractor-implements for ploughing, harrowing and other farm operations. The cultivators should also be encouraged to purchase tractors by the grant of loans recoverable in easy instalments.

(Paragraph 81)

20. As *bet* lands are subject to annual floods from the rivers, we recommend that a belt of thick growth of trees and grasses, at least 1,000 ft. in width, may be established along the river banks in order to provide protection to the lands from the floods and prevent erosion and under-cutting of the banks.

(Paragraph 82)

21. Crop-cutting surveys should be conducted in the reclaimed areas during the Third Five Year Plan period, in order to have an accurate idea of the additional food production due to the land improvement measures.

(Paragraph 84)

22. The total cost of reclaiming 3,16,650 acres of land in categories I to IV comes to Rs. 5. 43 crores, i.e., about Rs. 171 per acre. The estimated additional production from the reclaimed areas is 1,17,500 tons valued at Rs. 3.85 crores. In terms of additional production, the average cost of reclamation per acre is economic.

(Paragraph 90)

23. A study of the cost of reclamation of lands in the different categories reveals that category IV offers the greatest promise for increasing agricultural production since the cost of land improvement per acre is the lowest, and there are also large areas of eroded lands where the adoption of soil and water conservation measures will produce quick and beneficial results for the needy sections of the farming community. In terms of additional production per acre, however, the lands in category I seem to be the most promising followed by the lands in categories III and II. The lands in category V are situated in tracts of low and variable rainfall and the returns are not expected to be commensurate with the investments on their improvement.

(Paragraph 91)

24. The following is the order of priority assigned to the different categories of land on the basis of the additional production per acre and the cost of reclamation :—

	Priority
Category I	1
Category IV	2
Category III	3
Category II	4

(Paragraph 94 to 98)

25. Although high priority has not been assigned to the reclamation of wastelands affected by salinity and alkalinity, it is hoped that, in view of the widespread damage to the cultivated lands caused by waterlogging, the State Government will give particular attention to the reclamation of saline and alkaline lands.

(Paragraphs 96 and 96.1)

26. The reclamation of sand dunes in the arid tracts should be taken up only when irrigation is available in these areas. The cost of reclamation is quite heavy, and the returns are not commensurate with the expenditure on land improvement.

(Paragraph 98)

Sd.—
(B. N. UPPAL)
Chairman.

Members .. ..
Sd.—
1. (F. C. GERA)
Sd.—
2. (J. P. MITAL)
Sd.—
3. (M. S. V. RAMA RAO)

Co-opted members from the Punjab State
Sd.—
1. (LAL SINGH)
Additional Secretary,
Revenue Department.
Sd.—
2. (S. C. JAIN)
Deputy Secretary to Government,
Punjab, Development (P) Department.
Sd.—
3. (S. K. MISRA)
Deputy Secretary,
Agriculture Department.
Sd.—
4. (H. L. UPPAL),
Director, Irrigation and Power
Research Institute.
Sd.—
5. (P. S. SAGGOO),
Officer on Special Duty,
Project Circle, Irrigation Branch.

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Sd.—
(A. S. VENU GOPALAN),
Secretary.

APPENDICES

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APPENDIX A

K. R. DAMLE, I.C.S.,
SECRETARY.

NO. F. 1024/SPL/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE
(*Department of Agriculture*)

New Delhi, June 11, 1959.

My dear

You will agree that the importance of reclamation of culturable wastelands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable wastelands in the country has been variously estimated and the figures run into millions of acres. These wastelands are of two categories :—

(a) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis* ; and

(b) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. The Committee will consist of the following :—

1.	Dr. B. N. Uppal, Agricultural Commissioner, Government of India	Chairman
2.	*Dr. J. K. Basu, Senior Director of Soil Conservation Government of India	Member
3.	Shri F. C. Gera, Chairman, Central Tractor Organisation	Member
4.	Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	Member

In addition, the Committee will co-opt in individual States the following officers :—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing wastelands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours sincerely,

(Sd.) K. R. Damle.

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd Feb., 1960 *vide* Memo. No. 12-1/59-GMF(Co), dated the 3rd February, 1960 (copy enclosed).

NO. 12-1/59-GMF(CO)
GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE
(*Department of Agriculture*)

New Delhi, the 3*rd February,* 1960.

SUBJECT :—*Reclamation of culturable wastelands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F. 1024/SPL/59, dated the 11th June, 1959, referred to therein :—

"Shri M. S. V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,

in place of Dr. J. K. Basu since retired"

(Sd.) V. Balasubramanian,
Under Secretary.

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APPENDIX B

Questionnaire issued by the Wastelands Survey and Reclamation Committee.

1. What is the total areas of culturable wasteland in your State?

(Culturable wasteland is defined as under :—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3, and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE

DISTRICT

Details in respect of Block No.———consisting of 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the colonization operations in the block successfully?
12. If so, what would be the likely cost of acquisition?

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13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted?
14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.
15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors? If the former, is adequate labour locally available?
16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.
17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block?
18. What is the type of soil in the block? (alluviums, black, red or lateritic).
19. Is the land flat or gently sloping or steep? What is the depth of the soil?
20. What crops are grown in the area round about the block?
21. What is the yield per acre of each crop?
22. What is the nearest marketing centre for these crops?
23. What is the extent and distribution of rainfall in the area?
24. Can irrigation facilities be made available for the block? If so, what kind of facilities?
25. Whether these irrigation facilities will be perennial or non-perennial?
26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Five Year Plan will cover this land?

27. What is the depth of sub-soil water? Is water sweet or brackish?

28. Are anti-malarial operations necessary in the area for successful colonization?

29. Is any endemic disease prevalent in the area? If so, do the State Government contemplate any measures to combat this disease?

30. Is drinking water available in the block?

31. Are there any drinking water wells in use?

32. Is the area subject to depredations of wild animals? If so, what animals?

33. Is the block likely to attract settlers from distant places in the State or from other States?

34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block?

35. Do you think educated unemployed could be successfully settled in the block?

36. What should be the unit of allotment per settler?

37. Would you suggest that the settlers should put up their homesteads on allotted lands, or would you like to set up *abadis* for them? If the latter, what should be the unit of allotment for residential purposes in the village *abadi* ?

38. Would it be necessary to organise any training for the settlers, before they are allotted land? (the settlement will be on cooperative basis).

39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX C

Dr. B. N. Uppal,
Chairman, Wastelands Survey & Reclamation Committee.

D.O. No. F. 13/59-WLS&C.
GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
Department of Agriculture, 'Krishi Bhavan'

New Delhi, January 2, 1960
Paus 12, 1881.

Dear Shri

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term ‘contiguous used in Appendix ‘A’ to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators’ holdings or some natural obstructions, it should be considered more or less compact or ‘contiguous’ so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,

(Sd.) B. N. Uppal

All Liaison Officers in the States and Union Territories.

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APPENDIX D

Average yield (in lb.) per arce of the principal crops in the Punjab.

District	Crops												
	Rice	Wheat	Jowar	Bajra	Barley	Maize	Gram	Sugar-cane	Cotton		Sesamum	Rape & mustard	Tobacco
									Deshi	American			
Hissar	1,045	1,129	61	287	765	897	704	2,796	149	177	68	326	617
Rohtak	1,111	1,169	89	318	1,136	897	581	3,594	162	190	71	343	961
Gurgaon	1,111	1,101	150	382	981	897	517	3,437	134	140	69	329	905
Karnal	1,111	1,002	86	299	773	1,015	764	2,761	143	175	60	328	987
Ambala	896	716	95	313	647	802	697	2,375	86	139	94	244	1,160
Simla	—	716	—	—	—	897	—	—	—	—	—	—	—
Kangra	1,263	625	95	—	651	1,205	461	1,286	—	—	123	201	312
Hoshiarpur	1,187	586	95	301	616	809	541	1,702	85	134	100	352	922
Jullundur	1,187	691	95	301	1,120	856	480	2,900	133	173	68	391	1,152
Ludhiana	1,187	939	95	301	1,070	909	568	3,225	135	161	54	451	—
Ferozepore	1,012	792	95	315	817	960	675	2,600	218	244	63	372	—
Amritsar	1,185	837	95	301	850	692	651	2,604	108	122	25	543	987
Gurdaspur	1,035	630	95	301	754	592	539	2,134	99	128	118	267	—
Bhatinda	656	660	203	274	508	401	349	2,424	—	1,150	—	278	2,145
Kapurthala	832	623	329	411	576	1,269	657	3,360	—	600	—	235	746
Mohindergarh	—	797	154	128	735	610	115	—	—	—	—	285	199
Patiala	421	739	531	207	576	420	432	1,900	—	910	—	113	474
Sangrur	917	697	152	296	444	566	553	1,726	—	1,029	—	226	414

Sources —(*i*) Punjab Season and Crop Report for the Agricultural Year ending June 1956.

(*ii*) Pepsu Season and Crop Report for the Agricultural Year 1950-51.

APPENDIX E

Land utilisation statistics for the Punjab for the year 1957-58 (district-wise)

Sl. No.	District	Total geographical area		Forests	Land not available for cultivation		Other uncultivated land excluding fallow lands			Current fallows	Fallows other than current fallows	Net area sown
		By professional survey	By village papers		Barren & unculturable lands	Land put to non-agricultural uses	Culturable waste	Permanent pastures and other grazing lands	Land under miscellaneous tree crops, groves not included in area sown			
1.	Hissar ..	.. 34,50,240	34,32,204	322	57,161	90,758	2,08,477	—	—	2,59,084	—	28,16,402
2.	Rohtak	.. 14,90,560	14,92,631	6,221	19,618	1,09,602	97,913	24,854	261	41,530	—	11,92,632
3.	Gurgaon	.. 15,15,520	15,03,772	30,143	67,463	1,77,415	8,233	20,817	257	35,905	703	11,62,836
4.	Karnal ..	.. 19,66,720	19,75,033	3,908	1,57,042	80,958	2,51,678	97,214	4,494	86,493	—	12,93,246
5.	Ambala ..	.. 12,58,870	12,52,297	1,33,269	1,26,005	98,968	68,977	15,376	—	56,462	—	7,53,240
6.	Simla ..	.. 5,130	4,833	2,770	1,277	—	94	397	—	28	—	267
7.	Kangra	.. 61,24,160	63,95,366	6,62,148	48,33,272	1,56,148	1,20,747	49,337	—	86,852	—	4,86,862
8.	Hoshiarpur	.. 14,80,400	14,21,975	35,813	4,67,509	90,468	24,140	21,457	12,572	46,496	—	7,23,520
9.	Jullundur	.. 8,53,760	8,59,017	208	64,065	42,820	38,596	—	—	70,539	—	6,42,789
10.	Ludhiana	.. 8,46,720	8,46,415	3,334	30,466	55,608	66,472	1,733	—	49,331	—	6,39,471
11.	Ferozepore	.. 26,28,480	26,17,693	—	1,93,140	—	1,35,103	—	—	3,27,329	7,106	19,55,015
12.	Amritsar	.. 12,41,600	12,55,954	943	12,187	1,57,363	1,45,284		—	84,852	—	8,55,325
13.	Gurdaspur	.. 8,72,320	8,54,518	9,309	1,49,000	620	69,089	—	526	1,09,659	—	5,16,315
14.	Bhatinda	.. 14,44,480	15,85,258	422	69,579	—	39,585	—	—	14,739	—	14,60,933
15.	Kapurthala	.. 4,03,200	4,11,550	168	2,450	54,787	45,102	—	2,788	47,607	3,760	2,54,888
16.	Mohindergarh	8,59,520	8,57,718	981	—	71,785	63,230	—	—	12,618	—	7,09,104
17.	Patiala ..	.. 16,67,200	15,80,115	33,832	1,48,818	63,954	3,24,509	—	—	46,191	—	9,62,811
18.	Sangrur ..	.. 20,60,800	19,36,570	2,216	1,16,854	—	1,01,690	—	—	71,870	—	16,13,940
	Total	.. 3,01,19,680	3,02,82,919	9,26,007	65,15,906	12,51,254	18,08,919	2,31,185	20,898	14,47,585	11,569	1,80,69,596

APPENDIX F

Statement showing details of blocks in categories I and II offered for reclamation.

District	Name of block	Block No.	Nearest railway station	Accessible by fair/all-weather road	Whether included in C.D. Block	Area (acres)	Estimated cost of acquisition per acre (Rs.)	Amount of rainfall (inches)	Depth & Nature of sub-soil water	Endemic-diseases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Category I					
Karnal	Gulha	1.	Kaithal	All-weather	Yes	15,000	500	18	25′—30′, sweet	Nil
Hissar	Ottu	2.	Sirsa	No roads	No	15,000	400—500	13	Deep, brackish to sweet	Nil
Hissar	Fatehabad	3.	Sirsa	All-weather	Yes	5,000	400—500	13	Deep, brackish to sweet	Nil
Hissar	Tohana	4.	Sirsa	All-weather	Yes	5,000	400—500	13	Deep, brackish to sweet	Nil Nil
Patiala	Harchandpura	5.	Patiala	Fair weather	Yes	1,500	500	30	5′—6′, sweet	Nil
Rohtak	Gujjar Kheri	6.	Ganaur	Fair weather	Yes	350	500	16	6′—8′, sweet	Nil
					Category II					
Amritsar	Patti	7.	Patti	Fair weather	Yes	7,000	800	16—20	3′—5′, sweet	Nil
Amritsar	Verowal	8.	Beas	All-weather	Yes	2,500	800	16—20	3′—5′, sweet	
Amritsar	Ajnala	9.	Amritsar	All-weather	No	15,000	800	16—20	3′—5′, sweet	Nil
Jullundur	Sangowal	10.	Shakkot Malsian	No roads	No	3,000	300	20—25	8′—12′, sweet	Nil
Jullundur	Talwan	11.	Nurmahal	Fair weather	Yes	3,000	300	20—25	8′—12′, sweet	Nil
Jullundur	Rahon	12.	Nawan Shahr	All-weather	Yes	5,000	300	20—25	8′—12′, sweet	Nil
Kapurthala	Kapurthala	13.	Kapurthala	All-weather	Yes	10,000	200—300	20—30	10′—15′, sweet	Nil
Kapurthala	Sultanpur	14.	Sultanpur	Fair weather	Yes	11,000	200—300	20—30	10′—15′, sweet	Nil
Kapurthala	Bholath	15.	Dhilwan	Fair weather	Yes	7,000	200—300	20—30	10′—15′, sweet	Nil
Kapurthala	Phagwara	16.	Phagwara	All-weather	Yes	2,000	200—300	20—30	10′—15′, sweet	Nil
Ludhiana	Machhiwara	17.	Khanna	All-weather	Yes	5,000	500	20	5′—6′, sweet	Nil

APPENDIX F (*contd.*)

Ludhiana	Sidhwan Bet	18.	Jagraon	All-weather	Yes	6,000	150—200	25	4′—5′,	sweet	Nil
Ferozepore	Ferozepore	19.	Ferozepore	All-weather	No	6,000	150	15—16	5′,	sweet	Nil
Ferozepore	Jalalabad	20.	Jalalabad	All-weather	Yes	5,000	200	15—16	5′,	sweet	Nil
Ferozepore	Dharamkot	21.	Moga	All-weather	Yes	4,000	150—200	15—16	5′,	sweet	Nil
Ferozepore	Mallanwala	22.	Mallanwala	Fair weather	No	2,000	150—200	15—16	5′,	sweet	Nil
Gurdaspur	Dera Baba Nanak	23.	Dera Baba Nanak	All-weather	Yes	800	400	35—40	5′—6′,	sweet	Nil
Gurdaspur	Talibpur	24.	Gurdaspur	Fair weather	Yes	1,500	300	35—40	5′—6′,	sweet	Nil
Gurdaspur	Naushera	25.	Gurdaspur	All-weather	Yes	2,000	300	35—40	5′—6′,	sweet	Nil
Gurdaspur	Sri Hargobindpur	26.	Batala	All-weather	Yes	2,000	300	35—40	5′—6′,	sweet	Nil

APPENDIX G

Statement showing the break-down and ownership of the areas in categories I & II offered for reclamation

District	Name of block	Area of block	Percentage of area belonging to			
			Private individuals	Government	Village panchayats	Custodian of Evacuee Property
		Category I				
Karnal	Guhla	15,000	78—84	1—2	15—20	—
Hissar	Ottu	15,000	100	—	—	—
	Fatehabad	5,000	100	—	—	—
	Tohana	5,000	100	—	—	—
Patiala	Harchandpura	1,500	100	—	—	—
Rohtak	Gujjar Kheri	350	—	—	100	—
		Category II				
Amritsar	Patti	7,000	100	—	—	—
	Verowal	2,500	100	—	—	—
	Ajnala	15,000	60	—	—	40
Jullundur	Sangowal	3,000	25	—	10	65
	Talwan	3,000	25	—	10	65
	Rohaon	5,000	30	—	10	60
Kapurthala	Kapurthala	10,000	25	—	10	65
	Sultanpur	11,000	25	—	10	65
	Phagwara	2,000	100	—	—	—
	Bholath	7,000	30	—	10	60

APPENDIX G (*contd.*)

Ludhiana	Machiwara	5,000	40	10	—	50
	Sidhwan Bet	6,000	65	—	5	30
Ferozepore	Ferozepore	6,000	10	—	—	90
	Jalalabad	5,000	—	—	—	100
	Dharamkot	4,000	10	—	—	90
	Malhanwala	2,000	10	—	—	90
Gurdaspur	Dehra Baba Nanak	800	50	—	50	—
	Talibpur	1,500	30	—	30	40
	Naushera	2,000	—	—	20	80
	Sri Hargovindpur	2,000	—	—	20	80

APPENDIX H

Revenue Department

NOTIFICATION

No. 1045-*JN*(*IV*)-60/2836 *Chandigarh, dated the* 10*th February,* 1960.

The Governor of Punjab is pleased to make the following amendments in executive instructions contained in Notification No. RD-1(42) SS/56/24, dated the 28th May, 1956, known as Nazool lands (Transfer), Rules, 1956, issued by the Revenue Department of the erstwhile State of Pepsu and amended under Punjab Government Notification No. JS/57/1835, dated 8th May, 1957.

1. For Rule 3, the following shall be substituted, namely :—

Rule 3, *Transfer of Nazool lands*

In a village where Nazool land available is less than 10 acres and is being leased to members of Scheduled castes, it may be allotted to the present lessees individually up to the limit of a unit of Nazool land, provided they do not own any land of their own. Those who own some land, they may be allowed such area as would make up the unit of Nazool land as defined in the rules, when added to their own land, and the rest may be allotted to others.

(*b*) In the villages where Nazool land available is 10 acres or more, the Scheduled castes land owning Co-operative Societies may be formed by the heads of Scheduled Castes families in accordance with these rules, and the Nazool land may be allotted to them. If a Co-operative Society cannot be formed, then the Nazool land may be allotted to present lessees *i.e.* members of Scheduled Castes individually up to the unit of Nazool land as defined in the rules provided they do not own any land of their own. Those who own some land, they may be allowed such area as would make up the unit of Nazool land when added to their own area and the rest may be allotted to other members of Scheduled Castes.

(*c*) Nazool lands already under self-cultivation of landless persons of backward classes may be allotted to them, like members of Scheduled Castes in the manner prescribed at (*a*) and (*b*) above.

3-A *Mortgaged Nazool lands*

In the case of Nazool lands mortgaged with possession the mortgagers' rights be transferred to the Co-operative Society of Scheduled Castes, where the land is 10 acres or more, and to the individual members of Scheduled Castes where it is less than 10 acres, in the manner prescribed in rule 3(*a*) and (*b*) and the mortgagers should pay the entire mortgage amount which would be deemed as equal to the sale price of the land, in cases where mortgage money exceeds the price to be charged by Government under rules. Where the mortgage amount is less than the price to be charged according to the rules, the difference between the two amounts should be paid to the Government and the mortgage money to the mortgagees.

APPENDIX I

Notice for inviting applications for the grant of inferior lands for improvement

1. Whereas instructions have been received for the grant of evacuee lands in the Punjab, described in the particulars hereunto annexed, and marked Schedule 'A', notice is hereby given that the plans of the said lands are open to inspection, free of charge, at the office of the Deputy Commissioners up to————————————. The conditions under which the land will be held are specified in Schedule 'B' annexed.

2. The area of the lands and other particulars are given in the statement attached and marked Schedule 'A'. The following categories of persons will be eligible for selection as grantees :—

(*i*) Persons whose lands have gone over to Pakistan side due to river action of Ravi and Sutlej,

(*ii*) Self-cultivating owners whose cultivable holding has been reduced to less than 5 acres on account of effect of water-logging and erosion due to river action,

(*iii*) Rai Sikhs (only for Border areas),

(*iv*) Landless tenants, both Harijans and others,

(*v*) Ex-servicemen, and

(*vi*) Graduates of Agricultural College.

3. The unit of allotment will be 15 acres of culturable land or 20 acres of culturable Banjar land and in the case of Graduate grantees 50 acres of culturable Banjar land.

4. Joint farming shall have to be done at least by four contiguous grantees.

Applicable to graduate grantees only

5. A Co-operative Society shall have to be formed for each village. A copy of Business bye-Laws of the Co-operative Society is also available for inspection, in the office of the Deputy Commissioner.

6. The Grantee will not be liable to pay land revenue rates and cesses or lease money for the first five years from the commencement of the tenancy. He will, however, be required to pay *abiana,* where canal irrigation facilities are made available to him. After the expiry of five years, single time land revenue, *abiana* and other cesses will be charged on such grants.

7. After the expiry of 10 years, the land will be transferred to the grantee at the rate of Rs. 100 per acre in a lump sum.

8. In case the grantee does not wish to purchase the land, it will be resumed without giving any compensation whatsoever for the improvement made by him. In the event of such resumption the allottee will give vacant possession of the land.

9. No exchange of land from one village to the other, or from the Tehsil to the other, or even from the district to the other will be allowed in any circumstances.

SCHEDULE 'B'

Statement of conditions covering grants of inferior land for improvement

1. This statement of conditions is issued subject to the provisions of the Colonisation of Government lands (Punjab) Act, 1912, hereinafter referred to as "the act aforesaid", and in pursuance of the provisions of section 10(2) thereof.

2. No person shall be entitled as of right to become tenant, that is to say, the State Government hereby reserve to itself and retains absolute discretion in the selection of tenants for the lands referred to in this statement.

3. In this statement of conditions :—

(*a*) "The lands" and "the said lands" shall, so far as each separate tenancy is concerned, be deemed to apply to and designate the lands included in that tenancy,

(*b*) "the date of commencement of the tenancy" means the date of the written order referred to in sub-section (3) and (4) of section 10 of the said Act,

(*c*) "Collector" and "Commissioner" shall have the meaning assigned to them in section 3 of the said Act,

(*d*) "Improvements" means improvements as defined in clause (19) of section 4 of the Punjab Tenancy Act, 1887.

Size of grant

4. Tenant receiving a grant of lands in accordance with these conditions will receive a grant not exceeding 20 acres of cultivable banjar land.

5. The tenant shall have to do joint farming with three other contiguous grantees.

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6. A Co-operative Society shall be formed by the allottees of each village and Business bye-Laws of this society, a copy of which is enclosed, shall be binding on each grantee. In case of breach, the tenancy shall be liable to resumption.

Reservation by Government

7. The State Government does not grant to the tenant but hereby absolutely excepts and reserves to itself out of land in respect of the said lands.

(*i*) All grounds situated in the said lands or any part thereof already marked out, excavated or otherwise utilized for the distributary,

(*ii*) All existing rights to and over all mines and minerals, coals, gold-washings, earth-oil and quarries in or under the said lands or any part thereof.

8. The tenant shall at all times permit any officer or officers of the Government to enter into and upon the whole or any part of the lands and do all acts and things that may be necessary or expedient for the purpose

of searching for working, getting or carrying away any such mines and minerals, coals, gold-washings, earth-oil and quarries.

Compensation for damage occasioned by exercise of Government Powers

9. The State Government agrees to pay to the tenant reasonable compensation for any damage at any time directly occasioned by the exercise by the State Government of all or any of the rights reserved to itself in clause 7 and clause 8 other than existing rights of way and water and other easements.

10. The State Government does not grant to the tenant, but hereby absolutely excepts and reserves all roads situated in the said lands or any part thereof which have been marked out on the ground or delineated in the plan or plans kept in the office of the Collector.

And it like-wise excepts and reserves the right of the Public to traverse a width of 3 Kadams (16½ ft.) along one side of the lines bounding 25 acres rectangles wherever this way be considered necessary in the Public interest by the Collector and also to traverse a width of 3 Kadams (16½ ft.) otherwise situated wherever the Collector considers this necessary in order to replace an existing thoroughfare and the tenant is prohibited from cultivating or otherwise obstructing the thoroughfare so provided.

11. The tenant shall at all times, on receipt of a requisition in writing signed by the Collector, permit the said Collector to take possession of and finally to resume for the Government, so much of the said lands as may from time to time, in the opinion of the said Collector, be required for construction, repairs or maintenance of railways, roads, water-courses or any works connected therewith.

12. No compensation shall be claimable by the tenant or any person, in respect of such reservation or resumption as is referred to in clauses 10 and 11 but in respect of any area so reserved no occupiers' rates, land revenue, or cesses shall be payable by the tenant.

Cost of Survey, demarcation, roads and culverts.

13. The tenant shall be chargeable with the whole of the cost of the survey and demarcation of the said land, together with his share of the cost of the water-course or water-courses of the estate in which the said lands are situated, and of the roads and culverts necessary for the general convenience of correspondents of each estate, and also with the cost of keeping such roads and culverts in proper repair. The amounts of such charges, as determined by the Government or by the Collector in the case of repairs of roads and culverts, shall be recoverable in such manners and at such time as may be fixed by Government or by the Collector respectively.

Boundary marks

14. The tenant shall duly comply with such directions as the Collector shall from time to time require him to construct boundary marks on the limits of the said lands or any part thereof, and shall keep them when erected in good repair to the satisfaction of Collector.

Responsibilities of tenant with regard to crime

15. The tenant shall render all such assistance in the prevention or discovery of crime as is incumbent on the owners and occupiers of land

by a bye-law or rules for the time being in force in the Punjab, and is and shall be responsible in the same manner as Headmen, watchmen, or other inhabitants of villages are under say tract law or rules for the time being in force in the Punjab.

Payment of Land Revenue and other charges

16. No land revenue or other cesses shall be charged from the tenant of the land for the first 5 years. Of course, *abiana* will be leviable where canal irrigation has been extended. After the expiry of 5 years from the harvest in which the possession was taken by the tenant, single land revenue and cesses shall also be chargeable for the next 5 years.

Permanent residence of tenant

17. The tenant shall take up his residence permanently in the estate in which the lands are allotted within six months of the date on which the Collector directs that he be put in possession of specified area of land.

Trees and brush-wood.

18. All brush-wood and trees on the said land shall be at the absolute disposal of the tenant and may be sold out by him.

Improvement

19. The tenant may sink wells, make water-courses, plant trees, build houses and otherwise improve the land, and subject to the due fulfilment by him of the conditions and liabilities set forth in this statement, shall be entitled to all the products of land other than those specified in clause 7 thereof, provided that no water-course shall be made on a plan or in a position not approved by the Irrigation Department, and that every water-course in use shall be kept in proper repair by the tenant to the satisfaction of that Department. In case of resumption of grant for breach of any of the terms and conditions by the grantee, he will not be entitled to any compensation for any improvement made by him.

Cultivation of land

20. The tenant shall not use the said lands or any part thereof in a manner which renders them unfit for the purposes for which he holds them, and shall bring one half of the culturable area thereof under cultivation within three years from the date of commencement of the tenancy and the whole of it similarly reckoned within five years from the same date, and thereafter he shall keep the said lands under cultivation to the extent of one half thereof during each harvest.

The tenant shall cultivate the whole of his land with his own hands, or his successors in interest. Graduate grantees shall be allowed to employ paid labour.

Special conditions for the cultivation of land

21. The tenant shall :—

(*i*) Follow the advice of the Agricultural Department, if given regarding the sowing of improved seeds,

(*ii*) Either purchase pure cotton seed annually from the Agricultural Department its seed agencies or retain in hand sufficient *kapas* of improved varieties from his own produce to provide his seed requirement for the succeeding year, (*iii*) Provide and use improved implements on the following minimum scale per square or rectangle.

Applicable to graduate grantees only

(*a*) One furrow-turning plough, Rajah or Chattamooga,
(*b*) One bar harrow,
(*c*) One kharif drill,
(*d*) One rabi drill (preferably of the automatic type, in which case one per two squares of rectangles will be sufficient).

(*iv*) Maintain two pairs of bullocks per square or rectangle of land allotted,

(*v*) Sow all wheat and cotton crops by drill in lines as recommended by the Agriculture Department,

(*vi*) Break up initially all land after harvest by using a furrow-turning plough,

(*vii*) Green manure annually not less than two acres per square or rectangle,

(*viii*) Store all farmyard manure carefully in a properly constructed pit or pits and either collect in the same pit or compost in a separate pit or pits all available waste matter on the holding,

(*ix*) Adopt at his own cost such measures as are recommended by the Agricultural Department for the control of insect pests and crop diseases.

Tenancy liable to resumption in convictions of tenant

22. If the tenant has been convicted of any non-bailable offence, or has been ordered under section 112 of the code of criminal procedure, to execute a bond to be of good behaviour or is adjudged by the Collector to be guilty of other misconduct which renders him unfit to remain a grantee of land, he shall be deemed to have committed a breach of these conditions and his allotment shall be liable to cancellation under the orders of the Collector of the district.

23. At or after the expiration of 10 years from the date of the commencement of the tenancy, the tenant, having duly paid all sums due to Government under the conditions herein before described and having duly observed all the stipulations herein contained and to be observed by him, shall be entitled to purchase the said land at the rate of Rs. 100 per acre in a lump sum.

24. In case, the grantee does not wish to purchase the land, it will be resumed. In such an event, the grantee shall not be entitled to any compensation, whatsoever, for the improvements made by him and shall give vacant possession of the land allotted to him.

Arbitration

25. In the event of any dispute arising between the Government and the tenant during the currency of the tenancy as to any matter in any way relating to the property and rights of Government or as to any matter or thing any way connected with it, the dispute shall be referred to the Commissioner of the Division. Appeal against his order will be with the State Government, whose decision shall be final.

SCHEDULE 'A'

Table showing surplus inferior evacuee land in Jullundur Division

Sl. No.	Name of the District	Tehsil	Area (bighas)		Total
			Banjar Qadim	Ghair Mumkin	
1.	Jullundur ..	1. Jullundur	28 7 17	6 7 0	35 6 17
		2. Nakodar	2,061 3 5	866 6 7	2,928 1 12
		3. Nawanshahar	1,874 5 8	2,763 1 4	4,637 6 12
		4. Phillaur	1,317 0 0	7,016 6 7	8,333 6 7
		Total ..	5,282 0 10	10,653 4 18	15,935 5 8
2.	Ludhiana ..	1. Ludhiana	4,556 3 3	318 4 17	4,875 0 0
		2. Jagraon	1,667 1 11	15 1 2	1,682 2 13
		3. Samrala	1,370 6 4	606 3 7	1,977 1 11
		TOTAL ..	7,594 2 18	940 1 6	8,534 4 4
3.	Ferozepore ..	1. Ferozepore	1,821 7 13	294 7 2	2,116 6 15
		2. Moga	0 5 18	0 0 17	0 6 15
		3. Zira	4,039 5 11	634 1 2	4,673 6 13
		4. Mukatsar	—	—	—
		5. Fazilka	2,004 0 3	630 3 9	2,634 3 12
		TOTAL ..	7,866 3 5	1,559 4 10	9,425 7 15
4.	Amritsar ..	1. Amritsar	109 4 17	90 4 0	200 0 17
		2. Tarn Taran	112 5 8	207 4 19	320 2 7
		3. Patti	223 7 0	0 2 0	224 1 0
		4. Ajnala	4,792 0 19	590 6 11	5,382 7 10
		TOTAL ..	5,238 2 4	889 1 10	6,127 3 14
5.	Gurdaspur ..	1. Gurdaspur 2. Pathankot 3. Batala	304 0 11	58 2 0	362 2 11
		TOTAL ..	304 0 11	58 2 0	362 2 11
6.	Kangra ..	1. Kangra	66 0 10	6 7 17	73 0 7
		2. Nurpur	313 7 3	255 5 4	1,069 4 7
		3. Dehra	418 6 10	52 3 15	471 2 5
		4. Palampur	658 4 13	0 5 8	659 2 1
		5. Hamirpur	467 0 0	111 6 0	578 6 0
		TOTAL ..	2,424 2 16	427 4 4	2,851 7 0
7.	Hoshiarpur ..	1. Hoshiarpur	3,201 3 1	1,670 6 17	4,872 1 18
		2. Garhshankar	1,347 4 4	482 6 18	1,830 3 2
		3. Una	694 1 0	240 3 4	934 4 4
		4. Dasuya	71 3 3	787 3 6	858 6 9
		TOTAL ..	5,314 3 8	3,181 4 5	8,495 7 13
	GRAND TOTAL ..		34,023 7 12	17,709 6 13	51,733 6 5

SCHEDULE 'A'—*contd.*

Table showing surplus inferior evacuee land in Ambala Division

Sl. No.	District	Tehsil	Area (bighas)								
			Banjar Qadim			Ghair Mumkin			Total		
1.	Ambala ..	.. 1. Ambala	457	7	5	526	2	8	984	1	13
		2. Jagadhri	502	3	12	1,921	1	16	2,423	5	8
		3. Narain Garh	1,146	7	19	3,120	7	10	4,267	7	9
		4. Ruper	1,218	6	15	1,242	5	15	2,461	4	10
		5. Nalagarh	292	2	10	7	6	4	300	0	14
		6. Kharar	736	3	19	4,987	6	13	5,724	3	12
		TOTAL ..	4,355	0	0	11,806	6	6	16,161	6	6
2.	Hissar ..	.. 1. Hissar	159	7	4	26	7	6	186	6	10
		2. Bhivani	366	5	0	463	5	0	830	2	0
		TOTAL ..	526	4	4	490	4	6	1,017	0	10
3.	Rohtak	.. 1. Rohtak	31	5	12	4	4	15	36	2	7
		2. Gohana	205	6	0	95	7	15	301	5	15
		3. Jhajar	367	5	5	16	0	0	383	5	5
		4. Sonipat	3	7	18	35	3	6	39	3	4
		TOTAL ..	609	0	15	151	7	16	761	0	11
4.	Karnal ..	.. 1. Karnal	2,909	2	8	2,065	3	5	4,974	5	13
		2. Panipat	23	0	0	75	1	0	98	1	0
		3. Thanasar	154	7	16	926	5	7	1,081	5	3
		4. Kaithal	898	3	8	847	1	17	1,745	5	5
		TOTAL ..	3,985	5	12	3,914	3	9	7,900	1	1
5.	Gurgaon	.. 1. Gurgaon	1,023	2	0	142	7	14	1,166	1	14
		2. Palwal	173	1	7	10	0	10	183	1	17
		3. Nuh	249	5	0	3	7	10	253	4	10
		4. Ferozepore Jhirka	225	4	8	35	4	11	261	0	19
		5. Rewari	12	4	0	677	0	0	689	4	0
		6. Balabgarh	247	7	18	205	4	18	453	4	16
		TOTAL ..	1,932	0	13	1,075	1	3	3,007	1	16
	GRAND TOTAL		11,408	3	4	17,438	7	0	28,847	2	4

SCHEDULE 'A'—(*concld.*)

Table showing surplus inferior evacuee land in Patiala Division

Sl. No.	District	Tehsil	Area (bighas)		Total
			Banjar Qadim	Ghair Mumkin	
1.	Patiala ..	1. Patiala	299 0 13	24 1 0	323 1 18
		2. Narwana	10 0 16	143 1 0	153 1 16
		3. Nabha	32 4 17	—	32 4 17
		4. Rajpura	16 6 0	41 1 10	57 5 10
		5. Kandaghat	253 4 14	118 5 13	372 2 7
		TOTAL ..	612 1 0	327 1 3	939 2 8
2.	Sangrur	1. Sangrur	60 2 17	14 4 7	74 7 4
		2. Jind	11 3 10	60 7 0	72 2 10
		3. Sunam	4 0 10	2 1 0	6 1 10
		4. Barnala	40 1 14	38 4 9	78 6 3
		5. Malerkotla	254 6 10	0 3 17	255 2 7
		TOTAL ..	370 7 1	116 4 13	487 3 14
3.	Mohindergarh	1. Narnaul	33 6 0	—	33 6 0
		2. Cherkhi Dadrai	24 6 0	0 0 7	24 6 7
		TOTAL ..	58 4 0	0 0 7	58 4 7
4.	Bhatinda ..	1. Bhatinda	1 0 19	1 2 14	2 3 13
		TOTAL ..	1 0 19	1 2 14	2 3 13
5.	Kapurthala ..	1. Kapurthala	391 5 16	535 1 15	926 7 11
		2. Phagwara	16 5 13	3 7 6	20 4 19
		TOTAL ..	408 3 9	539 1 1	947 4 10
		GRAND TOTAL	1,451 0 9	984 1 18	2,435 2 7

(*vi*) culturable waste,

(*vii*) current fallows,

(*viii*) fallows other than current fallows, and

(*xi*) net area sown.

The lands classified under categories (*iv*), (*v*) and (*vi*) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable wate". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pastures lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the different State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is

सत्यमेव जयते

REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART I—PUNJAB

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WASTELANDS SURVEY AND RECLAMATION
COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
GOVERNMENT OF INDIA
SEPTEMBER, 1960

INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories :—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(*b*) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June, 1959, (Appendix A) with the following terms of reference :—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3 In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects or resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, viz., Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and submit reports for each State one after another and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. Accordingly, the report for the Punjab is being submitted first. This will be followed by reports in respect of the other States. A general report covering the entire country will then be presented which, *inter alia*, will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-up and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under :—

(*i*) forests,
(*ii*) barren and unculturable lands,
(*iii*) land put to non-agricultural uses,
(*iv*) permanent pastures and meadows,
(*v*) areas under miscellaneous trees and crops,
(*vi*) culturable waste,
(*vii*) current fallows,
(*viii*) fallows other than current fallows, and
(*ix*) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2-5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is

treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, viz., "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the different State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

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13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

PART I

THE PUNJAB

Preface

The report deals with the availability of wastelands in large-sized blocks in the Punjab and the measures to be taken for their reclamation.

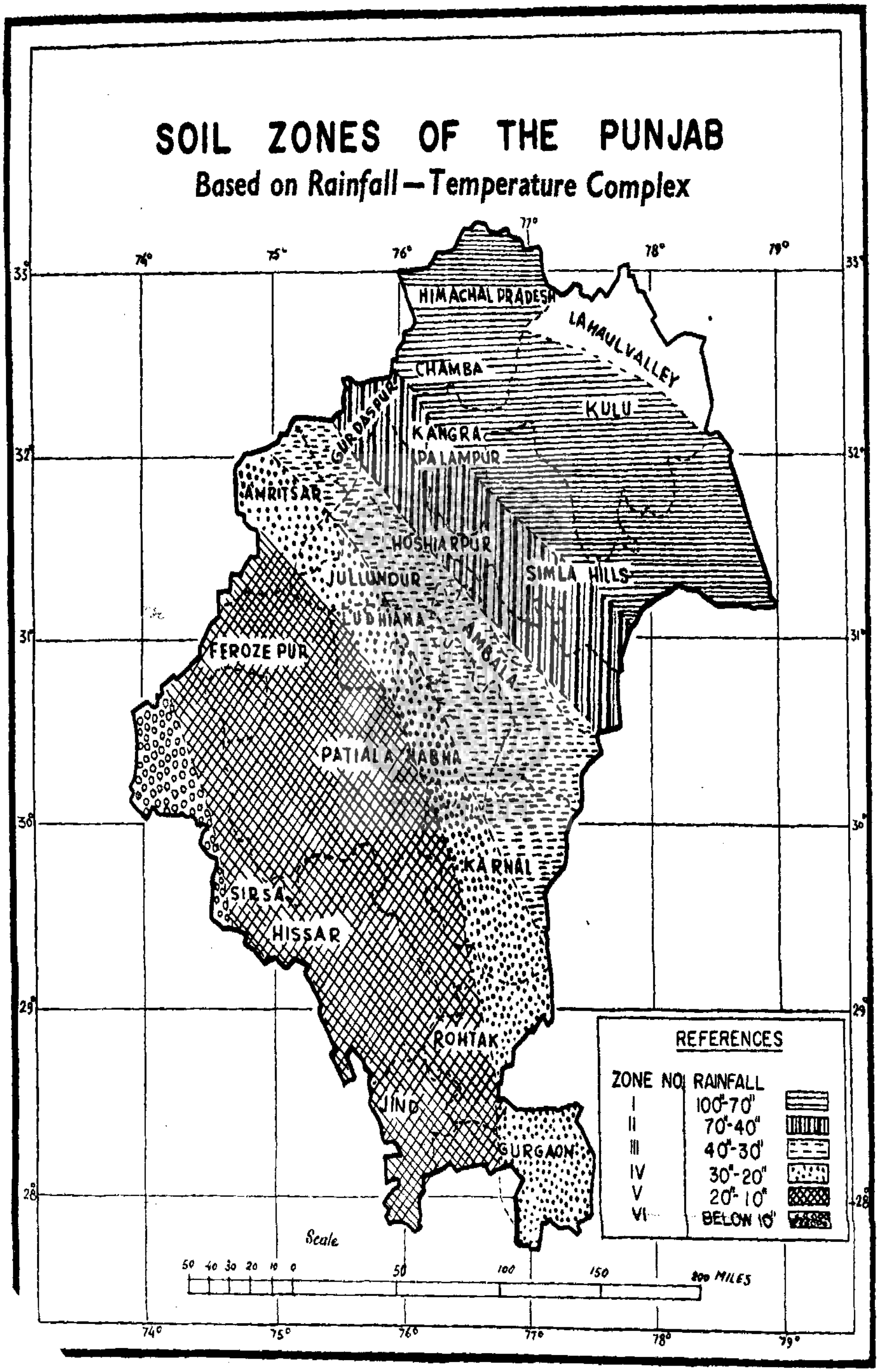
2. With a view to acquiring some knowledge of the wastelands in the State, we undertook tours of certain representative areas. It was, however, not possible to visit all the areas offered for reclamation, nor was this considered necessary.

3. On the first visit between the 2nd and 4th November, 1959, the Bhunar-Kheri area in the Patiala district where land reclamation work had been carried out in the previous years, and the Guhla area in the Karnal district where work was in progress, were inspected. A preliminary discussion between the members of the Committee and the officials of the Punjab Government was held at Chandigarh on the 3rd November, 1959. During the second visit of the Committee from the 16th to 18th November, 1959, we examined wastelands in the districts of Amritsar and Jullundur. During the third visit on the 14th and 15th December, 1959, the Committee had discussions at Amritsar with the Director, Irrigation and Power Research Institute, the Superintending Engineer, Upper Bari Doab Canal Circle, and the Deputy Commissioner, Amritsar, on the problems of reclamation and provision of irrigation facilities in the riverain areas. On the 22nd August, 1960, the draft report of the Committee relating to the State was discussed and finalised.

4. We wish to express our gratitude to the officials of the Punjab Government who gave us the benefit of their views. We wish to thank particularly the Liaison Officers, Shri S. S. Bedi and Shri Harkishen Singh Minhas, for obtaining the necessary data required by the Committee, and Sardar Hakim Singh, Assistant Director of Agriculture (Reclamation), and Dr. J. S. Kanwar, Agricultural Chemist to the Punjab Government, for carrying out a special survey in order to locate the wastelands in the State.

5. We are highly indebted to Dr. S. P. Raychaudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities at the cartographic laboratory of the Institute in printing the maps included in the Report.

MAP I

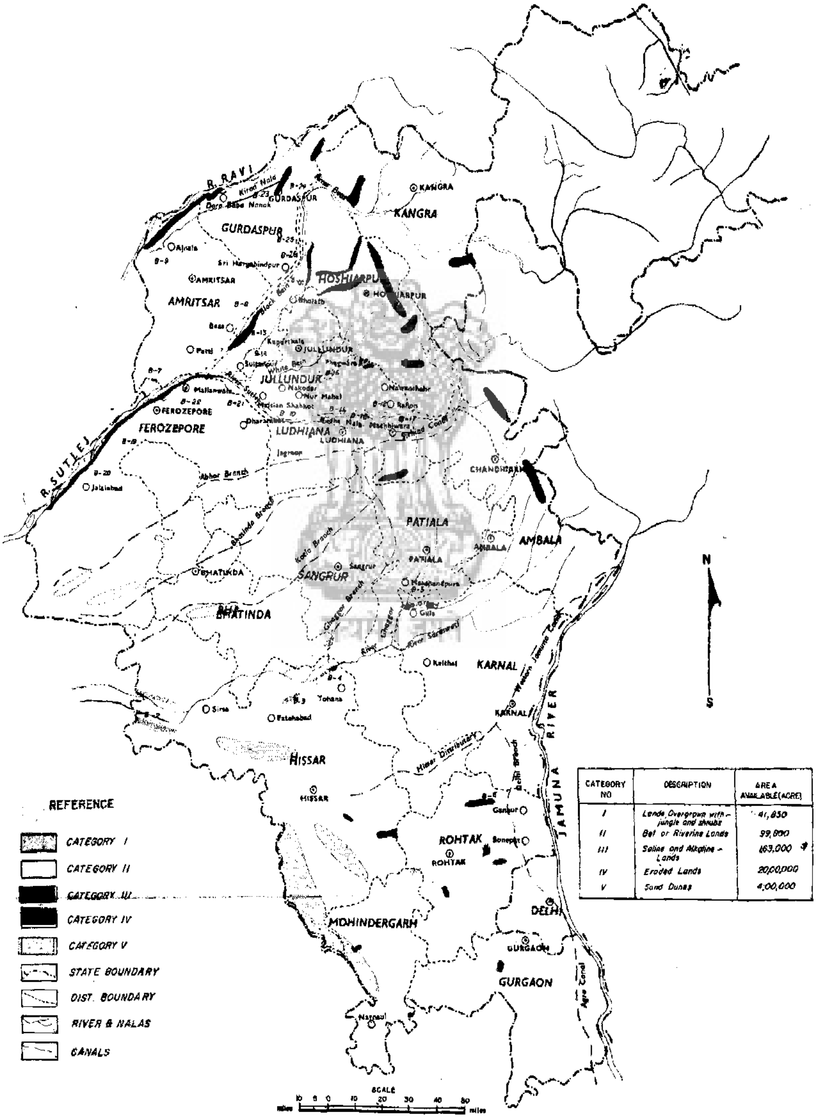

SOIL ZONES OF THE PUNJAB
Based on Rainfall—Temperature Complex
HIMACHAL PRADESH
LAHAUL VALLEY
CHAMBA
KULU
GURDASPUR
KANGRA
PALAMPUR
AMRITSAR
HOSHIARPUR
SIMLA HILLS
JULLUNDUR
LUDHIANA
AMBALA
FEROZE PUR
PATIALA NABHA
KARNAL
SIRSA
HISSAR
ROHTAK
JIND
GURGAON
REFERENCES
ZONE NO. RAINFALL
I 100"-70"
II 70"-40"
III 40"-30"
IV 30"-20"
V 20"-10"
VI BELOW 10"
Scale
50 40 30 20 10 0 50 100 150 200 MILES
74° 75° 76° 77° 78° 79°
33° 32° 31° 30° 29° 28°

MAP II

PUNJAB

MAP SHOWING LOCATION OF WASTELANDS

(IN BLOCKS OF 250 ACRES OR MORE)



CATEGORY NO	DESCRIPTION	AREA AVAILABLE (ACRE)
I	Lands Overgrown with jungle and shrubs	41,850
II	Bet or Riverine Lands	99,800
III	Saline and Alkaline Lands	163,000
IV	Eroded Lands	20,00,000
V	Sand Dunes	4,00,000

REPRODUCED AT
Cartographic Laboratory, I.A.R.I., New Delhi-12

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D	Summary of general conclusions and recommendations	9—11
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SECTION A

(General aspects)

General aspects

The State of West Bengal consists of 15 districts excluding Calcutta, namely, 24-Parganas, Nadia, Murshidabad, Burdwan, Birbhum, Bankura, Midnapore, Hooghly, Howrah, Jalpaiguri, Darjeeling, Malda, West Dinajpur, Purulia and Cooch Behar. The total geographical area of the State is about 34,000 sq. miles.

2. The population of West Bengal, according to the 1951 census, is 2.4 crores which gives an average density of about 769 persons per sq. mile, as compared to 287 for the country as a whole. It is the second most populous State in the country. Of the total population, 57 per cent of it is engaged in agricultural pursuits.

3. According to its topography, West Bengal can be broadly divided into five regions as follows:—

(*i*) Mountainous (Himalayan) region	Comprising parts of the Darjeeling district.
(*ii*) Foot-hills or *terai* (doars) region	Part of Darjeeling, Jalpaiguri and Cooch Behar-districts.
(*iii*) Gangetic plain	West Dinajpur, part of Purulia, Malda, Murshidabad, Nadia, Howrah, Hooghly, and part of Burdwan, Birbhum Bankura, Midnapore and 24-Parganas.
(*iv*) Red and lateritic soils region contiguous with Chotanagpur.	Part of Bankura, Birbhum, Burdwan, Midnapore and Purulia.
(*v*) Coastal region:	
(*a*) Saline and swampy areas and areas reclaimed along the sea-board. ..	Southern part of 24 Parganas.
(*b*) Sand dunes and flats	Southern part of Midnapore.

Climate

4. Due to its peculiar geographical position and varied topography, West Bengal has a wide range of climate from extreme cold in the northern hills of the Darjeeling district to the tropical heat of the plains. The annual rainfall in the plains varies from 50 to 75 inches, while in the hilly areas and in the foot-hills of the Himalayas, it is as high as 110-190 inches. The rainfall is not well distributed as most of it is received during the months of June to mid-October.

Soils

5. The soils of West Bengal can be classified into laterite, red soils, alluviums, coastal soils and *terai* soils (*vide* Map I). A brief description of these soils is given below:—

5.1. Laterite and lateritic soils occur in the districts of Birbhum, Burdwan Bankura and Midnapore. These soils are highly eroded and the topography is undulating. They are deficient in organic matter and in plant nutrients. They have also low calcium content, and are, therefore, acidic in reaction. These soils are generally responsive to nitrogen and phosphate manuring.

5.2. Red soils are found in the districts of Birbhum, Burdwan, Bankura, West Dinajpur and Midnapore. These soils vary in depth, and occur with and without occasional lime concretions in the profile, the landscape giving a chessboard appearance of red soils, lateritic soils and laterites. They are deficient in nitrogen and available phosphate and also in calcium. They are mildly acidic in reaction. These soils are porous and, if the monsoon rains fail, the crops growing in them suffer from lack of moisture.

5.3. The alluvial soils of the State belong to two families, *viz.*, the Ganga alluvium and Vindhya alluvium. The soils of the Ganga alluvium are found in the districts of Murshidabad, Nadia, 24-Parganas, Burdwan, Hooghly, and a portion of Midnapore. They are generally deficient in nitrogen, and respond to the application of nitrogenous fertilisers. The Ganga flat lands have a more mature profile and vary from clays to sands, depending upon the local topography. These soils are eminently suited to the cultivation of *aman* paddy, and in the depressions, *boro* paddy is grown.

5.3.1. The Vindhya alluvial soils are formed from the alluviums brought down from the Rajmahal Hills and the Chotanagpur plateau. These comprise Rajmahal, Damodar and Kosi riverine soils, flat land soils and upland soils. They occur in the districts of Birbhum Burdwan, Hooghly and Midnapore, and respond well to the application of nitrogen in which they are deficient.

5.4. Next in importance among the alluvial soils are the coastal alluviums of tidal origin which occur in the districts of 24-Parganas and Midnapore. These soils are protected from the ingress of sea-water by the bunds or dykes constructed in the coastal area. Sluices are constructed in these bunds so as to allow the escape of rain-water which helps in leaching out the salts from the soil. These soils are rich in plant nutrients and can grow good crops of paddy.

5.5. *Terai* soils occur at the foot-hills of the Himalayas, and are formed by the deposition of the soil materials brought down from the hills by rains. The soils are mostly sandy, and are deep black to grey black in colour. The soils are acidic in reaction and poor in plant nutrients. The cultivation of paddy in these soils is rather precarious because of their poor moisture-holding capacity. The application of nitrogen in the form of oil-cakes and phosphates has been found to increase the yield of the paddy crop when grown in these soils. These soils occur in the majority of the rice-growing areas in the Jalpaiguri and Cooch-Behar districts.

6. The important crops grown in the different soil zones are as below:—

Soil zones	*Crops*
Red and lateritic soils	Paddy, gram, sugarcane, tobacco, jute, potato, pulses and vegetables.
Alluvial soils	Paddy, barley, gram, sugarcane, potato, jute, lentils, khesari, (*Lathyrus sativus*) and vegetables.
Terai soils	Paddy, maize, barley, gram, potato, tea and medicinal plants.

Irrigation

7. The total irrigated area in the State in the year 1956-57 was 28,73,800 acres, out of the total cropped area of 1,40,46,500 acres, representing about 20 per cent of the cropped area. The main source of irrigation in the State is canals, covering an area of 15,15,000 acres, or 50 per cent of the net irrigated area. Tanks account for 24 per cent, wells one per cent, and other sources 18 per cent. The main crop grown under irrigation is rice, which covers 25,15,800 acres out of the total irrigated area of 28,73,800 acres.

8. Of the net irrigated area in the State during 1956-57, the district of Midnapore had the maximum area under irrigation (6.8 lakh acres), followed by Birbhum (4.9 lakh acres), Burdwan (4.3 lakh acres) and Bankura (3.0 lakh acres) in the order of mention. Of the remaining districts, Murshidabad has 2.06 lakh acres under irrigation, Hooghly 1.83 lakh acres, and Jaipaiguri 1.64 lakh acres.

Natural vegetation, crops grown and yields obtained

9. The important weeds found in the different soil zones of West Bengal are as below:—

(i) *Alluvial soils*

Phenix dactlylifera, Borassus flabelliffer, Jatropha gossypifolia, Urema, Helitropium and *Sida* are the chief weeds. *Kans* grows abundantly in the flood plains of the rivers.

(ii) *Red and lateritic soils*

Hedges and waste spaces are covered with *Jatropha gossypifolia, Urena, Sida, dub* grass and spear grass. Babul (*Acacia arabica*) trees and *kans* grass are abundant by the sides of the rivers. Bushy sclerophyllous shrubs, locally known as *atari, beguna,* and sabai grasses are grown near the homesteads.

(iii) *Coastal alluvium and Terai soils*

Typha latifolia (Hogla) or *Typha egustifolia, Nal, Bhabni,* etc.

10. Rice is the staple food crop of the State. Of the total area of 1,20,28,000 acres under food grains, rice occupied 1,00,63,000 acres in 1956-57, *i.e.*, 84 per cent of the total area. Rice is cultivated under a variety of conditions in the State from the saline coastal belt to the mountainous region of the Himalayas up to an altitude of about 4,000 ft. According to the harvest seasons, the paddy crop in the State is classified as *aus* (autumn,) *aman* (winter) and *boro* (summer). Other food crops such as wheat, barley, gram, maize, bajra and jowar account for only 8 per cent of the total area under food-grains. . Among the commercial crops, jute and tea are the most important.

11. In 1956-57, the average yield per acre of the *aus* crop was 8.06 maunds, of *aman* 12.26 maunds, and of *boro* 12.11 maunds in terms of clean rice. The total production of rice in the year 1956-57 was about 4.34 million tons. West Bengal is the largest rice producing State in the Indian Union. Jute is an important crop of the State, and contributes 50 per cent to the all-India production, the figure for the year 1956-57 being 13.45 lakh bales. The average yields of important crops grown in the different districts are tabulated in Appendix D.

SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

12. The total area of the State may be classified under five different heads as under:—

	Acres (millions)
(*i*) Forests	2·32
(*ii*) Area not available for cultivation	2·97
(*iii*) Other uncultivated lands excluding current fallows	1·51
(*iv*) Current fallows	1·03
(*v*) Net area sown	12·02
TOTAL ..	19·85

13. It would be observed from the above statement that the classification adopted for reporting the land utilisation statistics of the State is not as elaborate as in most other States where the head "other uncultivated land excluding current fallows" is further split up into three sub-heads, namely, "culturable waste", "miscellaneous tree crops, groves, etc.", and "permanent pastures and other grazing lands."

14. In the case of West Bengal, therefore, the lands classified as "other uncultivated land excluding current fallows" are only to be considered for the purpose of locating large-sized blocks of land for reclamation and resettlement. The district-wise distribution of the area under each of the heads indicated above is given in Appendix E.

15. Of the total area of 1.51 million acres under the head "other uncultivated lands excluding current fallows", about 1.1 lakh acres have been located in the State for reclamation in blocks of 250 acres or more, in the districts of Midnapore, Purulia, Bankura and Jalpaiguri. While the data in repect of Midnapore, Bankura and Jalpaiguri are based on the district-wise surveys of wastelands conducted by the State Directorate of Agriculture with the co-operation of the Director of Land Records and Surveys during the year 1957-58, those for Purulia have been collected by conducting a special rapid survey for the purpose. In the survey carried out by the Directorate of Agriculture, the 24-Parganas and the hilly parts of the Darjeeling district were excluded from the purview.

16. As a result of the survey carried out by the Directorate of Agriculture, about 3 lakh acres of wastelands were located in the State of West Bengal in blocks of 1.25 acres or more as per details given below:—

District	Blocks each of size more than 10 acres		Blocks each below 10 acres (1.25 acres to less than10 acres)		Total blocks (1.25 acres and above)	
	No. of blocks	Area (acres)	No. of blocks	Area (acres)	No. of blocks	Area (acres)
Nadia	29	753	410	1,346	439	2,099
Murshidabad ..	48	1,298	495	1,664	543	2,962
Burdwan	406	12,596	1,271	4,261	1,677	16,857
Birbhum	561	17,168	2,346	7,321	2,907	24,489
Bankura	1,828	62,916	2,901	10,496	4,729	73,412

District	Blocks each of size more than 10 acres		Blocks each below (1.25 acres to less than 10 acres)		Total blocks (1.25 acres and below	
	No. of blocks	Area (areas)	No. of blocks	Area (areas)	No. of blocks	Area (acres)
Midnapore	1,425	58,733	2,741	10,197	4,166	68,930
Hooghly	83	2,387	128	415	211	2,802
Howrah	1	21	5	11	6	32
Jalpaiguri	851	51,143	2,544	9,828	3,395	60,971
Darjeeling	199	5,910	943	3,380	1,142	9,290
Malda	213	11,952	260	1,037	473	12,989
West Dinajpur ..	33	826	286	940	319	1,766
Cooch Behar ..	392	16,996	755	2,888	1,147	19,884
TOTAL ..	6,069	2,42,699	15,085	53,784	21,154	2,96,483

17. From the above table, it would appear that the wastelands form only a small proportion of the total area under the head "other uncultivated lands excluding current fallows", and that this category mainly includes areas which are utilised for growing trees, and as pastures.

18. In this connection, it is relevant to point out that there has been some confusion in the past in regard to the meaning of culturable waste. In the survey carried out by the Directorate of Agriculture, some of the wastelands, such as those found in the districts of Midnapore and Bankura, seem to have been ignored as they were considered unculturable. With the advance in our knowledge of land improvement, there is no doubt that such lands can be brought under cultivation and made fit for producing agricultural crops. In our opinion, therefore, the total area under culturable waste in the State is likely to be more than what has now been located. The actual information on the availability of wastelands can, therefore, be obtained only by conducting a survey as indicated in the introductory chapter.

Availability of wastelands

19. The wastelands in the State offered for reclamation can broadly be divided into the following four categories :—

I—Eroded lands,
II—*Char* lands,
III—*Terai* lands (flat lands at the foot of the hills), and
IV—Saline lands.

20. The distribution of wastelands under categories I, II, III and IV above in the different districts is given below :—

District	Area available under category (acres)				Total (acres)
	I	II	III	IV	
Midnapore	17,342	—	—	1,798	19,140
Purulia	57,250	—	—	—	57,250
Bankura	10,787	—	—	—	10,787
Jalpaiguri	—	12,594	13,869	—	26,463
TOTAL ..	85,379	12,594	13,869	1,798	1,13,640

21. Map II shows the location of blocks of wastelands in categories I, II, III and IV.

Category I

Details of blocks under different categories

22. The following table gives the names of the different blocks of wastelands found in the districts of Midnapore, Purulia and Bankura :—

District	Name of block (with reference to Police Station)	Block No.	Area (acres)
Midnapore	Keshiary	1	786
	Kharagpur	2	1,263
	Salboni	3	1,784
	Garbeta	4	7,863
	Chandrakona	5	236
	Jhargram	6	1,420
	Sankarail	7	2,808
	Binpur	8	1,232
Purulia	Purulia	9	19,000
	Jaipur	10	9,500
	Jhalda	11	500
	Para	12	7,500
	Hura	13	5,000
	Burabazar	14	1,750
	Kashipur	15	8,000
	Puncha	16	6,000
Bankura	Taldangra	17	1,376
	Simlapal	18	1,145
	Onda	19	6,100
	Vishnupur	20	875
	Sonamukhi	21	1,291

23. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

24. *Block* 1: This block is situated in the Dudhebudhi, Kulbani and Lanspal mouzas of the Keshiary police station. The land is more or less level. The soil is blackish loam with a tendency towards clay. The land is infested with *kans, motha* and *dub* grasses. The area is fairly level and there is consequently need for adequate drainage. The water-table is high, and irrigation facilities can be provided by the construction of wells or tube-wells. The cost of reclamation in this block is estimated at Rs. 50 per acre.

25. *Block* 2: The soil in this block is lateritic, with slopes varying from one to four per cent. Part of the area will have to be contour-bunded, while the rest may be grade-terraced. Exploration for the suitability of the area for deep tube-wells is in progress, and if promising results are obtained, irrigation will be assured. The soil is poor in fertility and is overlain with *murum.* The cost of reclamation will be roughly Rs. 100 per acre.

26. *Block* 3: The soil in this block is of the same type as in block 2. The water-table is very low, and hence the possibilities of providing irrigation are not bright, but a portion of the area in the block is likely to be irrigated by the Kangsabati river project which is expected to be completed by 1962.

27. *Block* 4: The area in this block which is fairly large, can be brought under cultivation by adopting suitable soil conservation measures, namely, contour-bunding, construction of graded terraces, etc. The soil is lateritic and poor in nitrogen, phosphate and organic matter. Some of the areas adjoining the block have already been taken up for reclamation under the Garbeta Rehabilitation Scheme, where 800 refugee families are to be settled by 1961-62. Part of the area in the block will be irrigated by the Kangsabati river project.

28. *Block* 5 is similar to block 4 as regards the type of soil, slope of land, etc. The sub-soil water is available at a depth of 20–25 feet below the ground-level and can be tapped for irrigation by the construction of wells.

29. *Blocks* 6, 7 and 8: The blocks located in the jurisdiction of the Jhargram and Sankaril police stations are more or less continuous. The type of soil found in these blocks is similar to that found in blocks 3, 4 and 5. The sub-soil water is available at a depth of about 30 feet in the Sankaril block, but the water-table is very low in the Jhargram and Binpur blocks.

30. In the blocks referred to in paras 26 to 29, the problems of reclamation are mainly contour-bunding, construction of laterals and waste-weirs, tractor ploughing and disc harrowing. The cost of these measures will be as under :—

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		Per acre (Rs.)
Contour-bunding and construction of laterals and waste-weirs	—	51
Ploughing	—	30
Disc harrowing	—	20
TOTAL ..	—	101

31. In Salboni and Garbeta and also in some areas in the jurisdiction of the Chandrakona police station, shrubs and stumps of trees are found, and these need to be removed before undertaking soil conservation measures. The total area over which the clearance work will be necessary is about 3,000 acres. It is estimated that the cost of removal of shrubs and jungle will be about Rs. 25 per acre.

32. *Block* 9 is a fairly big area consisting of several blocks in the jurisdiction of the Purulia police station. Here the land is undulating, and the soil is lateritic, with *murum* scattered on the surface and interspersed with quartz veins. It will, therefore, be necessary to remove stones before undertaking deep-ploughing with tractors. Contour-bunding will have to be carried out in the entire area as the slope of the land is more than 3 per cent on an average. Rainfall is about 50″. No irrigation is available, and the construction of wells will be costly as the water-table is low. Only seasonal crops can be grown in the block.

33. *Blocks* 10 and 11 fall in the jurisdiction of jaipur and Jhalda police stations respectively. The soil is stony in texture. Proper contour-bunding would render the lower contours fit for growing agricultural crops, but the upper ones should be reserved for growing cashewnut, sisal and forest trees. Of the 10,000 acres comprising these two blocks, about 4,000 acres may be available for agricultural purposes. The water-table is very low and hence no irrigation facilities are possible in the area.

34. *Block* 12: This block falls in the juridiction of the Pala Police station. The land is very slopy. Strip-cropping may be advocated in the area. Only seasonal crops can be grown as no irrigation is available.

35. *Block* 13: The block actually consists of three different sub-blocks. The first sub-block is a piece of high land of red soil with lateritic concretions. The second sub-block in the Kalaboni and Piuza mouzas is more or less slopy land with good soil-depth. By adopting suitable soil conservation measures, the land can be rendered fit for growing agricultural crops The third sub-block which is situated on the high land is stony and has not got the requisite soil-depth for supporting crop growth. In all these three sub-blocks, irrigation is not available and crops can be grown only during the monsoons.

36. *Blocks* 14 and 15 : The land in these blocks is flat, and the soil is red in colour. The rainfall of the area varies from 45" to 50". The slope is generally about 3 per cent, although at places where gullies have been formed, the slope is naturally more. Here again, only seasonal crops can be grown, there being no possibility of providing irrigation facilities.

37. *Block* 16: The land is rolling, and its slope varies from 2 to 6 per cent. Contour-bunding and terracing are necessary before agricultural crops can be grown in this area. The soil is lateritic, with quartz veins and lateritic concretions. Irrigation facilities are not available.

38. The measures for the reclamation of land in blocks 9 to 16 will be more or less similar to those in blocks located in the Midnapore district, except that at places where the slope of the land is high, terraces will have to be constructed, and in other cases, stones removed wherever they are to be found. The cost of reclamation may be estimated at Rs. 130 per acre.

39. *Blocks* 17 and 18 represent the same type of lateritic soil as is found in the wastelands of the Garbeta police station in the Midnapore district. In the Taldangra police station, the water-table is very low, while it is not so low in Simlapal. The area needs to be contour-bunded as the average slope is nearly 3 per cent. Irrigation facilities by sinking wells or tube-wells can be provided in the Simlapal police station area, but in Taldangra crops can be grown only during the rainy season. The average cost of reclamation will be the same as that in Garbeta. Certain parts of the area may be benefited by the Kangsabati river project.

40. *Block* 19: This block has two distinct types of soil, lateritic and calcium clay. Contour-bunding would be necessary because of the undulating nature of the land. Irrigation may become available in the area from the Kangsabati river project. The average cost of reclamation will not be more than Rs. 100 per acre.

41. *Block* 20: This block has similar problem of reclamation to those of the wastelands in the jurisdiction of the Garbeta police station.

42. *Block* 21 : The soil of this block is alluvium, formed by the deposition of silt from the river Damodar. The land is infested with *kans, sarkanda* and other pernicious weeds. It can be reclaimed by deep-ploughing with the help of tractors. The cost of reclamation will not exceed Rs. 75 per acre. Irrigation facilities can be made available by sinking shallow wells as the water-table is quite high.

43. To sum up, it may be stated that the wastelands found in the districts of Midnapore, Purulia and Bankura falling in category I are mostly undulating, with large upland tracts made up of ridges alternating with valleys. The rainfall ranges from 45″ to 55″. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. The uplands constitute about 60 per cent and the slopy and low lands 20 per cent each of the entire area. The uplands are more suitable for afforestation, and should be planted to cashewnut and other trees of economic importance. The areas offered for reclamation are practically devoid of trees or shrubs.

44. Land reclamation in these areas is primarily soil and water conservation work, which involves the adoption of the following measures depending upon the slope of the land, type of soil, etc. :—

(a) construction of contour-bunds or graded terraces,
(b) construction of bench terraces,
(c) gully-plugging,
(d) contour terracing,
(e) ploughing, and
(f) disc harrowing.

45. The total cost of reclamation of 85,379 acres in category I is estimated as under :—

District	Block No.	Area (acres)	Cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)
Midnapore	1	736	50	36,800
	2-8	16,606	100	16,60,600+ (75,000)*
Purulia	9-16	57,250	130	74,42,500
	17-20	9,496	100	9,49,600
Bankura	21	1,291	75	96,825
TOTAL ..		85,379		1,02,61,325

*Cost of removal of bushes and shrubs in Salboni, Garbeta and certain parts of the Chandrakona police station at the rate of Rs. 25 per acre for an area of 3,000 acres.

The average cost of reclamation would be Rs. 120 per acre.

46. Before we proceed to deal with the next category of wastelands, we wish to make the following suggestions :—

(i) It is necessary to introduce legislation on the lines of the model Act prepared by the Government of India and circulated to the State Governments, empowering the State Government to undertake soil conservation measures in the State. This legislation should contain provision to the effect that in case the soil conservation work is not carried out by the beneficiaries in accordance with the technical plans approved by the Government Department, this may be done by the Government, or on its behalf by the Panchayat Samiti, or by any other agency deputed by the Government, and the cost recovered from the beneficiaries.

(ii) The selected projects on soil conservation should be on a complete watershed basis. The lines on which contour ditches and bunds are to run should be decided in advance, including the alignment of surplus channels (vegetative waterways), masonry structures, etc.

(iii) In an area receiving a rainfall of 45", there is bound to be some stagnation of water above the bunds if they are aligned on a dead contour. Whilst this condition may be quite useful for a crop like paddy, it may prove harmful to the growth of sisal (*Agave sisalina*). This position can be improved either by providing suitable outlets, or by constructing graded bunds leading to a vegetative waterway.

(iv) The following field experiments may be laid out in order to study the variations in cost under different methods of bunding :—

(a) A small area of 25-50 acres in a "self-defended" catchment should be laid out with bunds of 10 sq. ft. section (consolidated) on a falling contour, the surplus water emptying on to a natural or artificial vegetative waterway. The distance between the bunds should not be more than 200 ft. The material for the bund should be excavated from the upstream side so as to form a trapezoidal channel.

(b) Another area of 25-50 acres should be laid out with the above type of bunds, excavation being from borrow pits of rectangular shape. The bunds should be on level with ends open and should discharge onto a vegetative waterway.

(c) A third catchment of 25-50 acres may be taken up. Trenches of 2 ft. in width and 2 ft. in depth may be dug out along the contours, and the excavated material should be used to form a bund on the downstream side. The interval between the trenches should not be more than 100 ft. These trenches should be on level with ends open. The bunds may be planted with sisal at closer spacing.

47. The above three field plots should be kept under observation for a period of three years, and the best of them from the point of view of cost and effectiveness should be adopted in future work.

Category II

48. *Block* 22. In this category, only one block comprising an area of 12,594 acres has been located in the jurisdiction of the Mal police station of the Jalpaiguri district. The area consists of seven more or less contiguous sub-blocks located in 30 mouzas, the names of which are given in Appendix F. The entire terrain is a flood plain formed by the deposition of sediments on the bed of the river Teesta. The topography is more or less flat, and the lands incline uniformly with a low gradient in all directions. There are also elevated locations as well as depressions in this area. The water-table of the land is high, and the entire soil-depth is within the zone of capillary fringe. The soil thus remains moist throughout the year. The lands are heavily infested with pernicious weeds, such as *Holga* (*Typha* sp.), *nal, bhabni, kans, sarkanda,* etc. The top-layers of the soil are rich in nitrogen as well as phosphate and

potassium. The area receives a rainfall of about 140″, most of which occurs in the months of April to September.

49. The main problem of this area is that it is subject to floods. Some flood control schemes are in operation in the area, and as a result of these measures, the hazard from the floods is considerably reduced, except at times when the Teesta is in high floods. The other problem is the soil erosion due to floods in the Teesta river. It has been suggested that a belt of thick growth of grasses, such as *nal, bhabni,* etc., may be established along the river bank to prevent under-cutting and erosion.

50. These *char* lands are very fertile and can grow good crops of paddy, sugarcane, jute, etc. As indicated above, the flood and erosion hazards make large-scale habitation in this area somewhat precarious, although settlements are possible at sites which are not subject to these hazards. The cost of removing shrubs and bushes and ploughing the land to make it fit for growing crops is estimated at between Rs. 75 and Rs. 100 per acre.

Category III

51. In this category of wastelands which consists of flat lands located at the foot of the hills (*terai* lands), six blocks have been located in the district of Jalpaiguri as per details given below :—

Name of Block	Block No.	Area (acres)
Maynaguri	23	2,958
Dhupguri	24	1,194
Jalpaiguri	25	6,532
Nagarkata	26	2,241
Alipurduar	27	568
Falakata	28	376
TOTAL ..		13,869

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Blocks 26 and 27 are covered with shrubs and jungle, while the rest are infested with pernicious grasses, such as *kans, sarkanda, motha,* etc. The soil is black in colour but very poor in nitrogen, phosphate, postassium and organic matter. Even after heavy rains, the soil dries up quickly, leaving no trace of moisture on the surface. The rainfall in the area is quite high, ranging from 120″ to 180″, but is confined to the period April to October. Only seasonal crops can be grown. The cost of reclamation is estimated at Rs. 100 per acre.

Category IV

52. In this category of wastelands, only two blocks (29 & 30) comprising an area of 1,798 acres have been located in the Contai and Ramnagar police stations of the Midnapore district. Salinity in the area is not very high, but the lands are slightly eroded. To reclaim these lands, suitable ameliorative measures for the removal of salinity would be necessary. The soil is heavy clay (sodium clay) and alluvium. It is rich in organic matter and plant nutrients. The rainfall in the area is fairly high, ranging from 70 to 80 inches. Good crops of paddy can be grown. The cost of reclamation is estimated at about Rs. 160 per acre.

SECTION C

(Disposal of reclaimed lands for cultivation)

Nature of ownership of wastelands and their disposal for cultivation

53. In the State of West Bengal, wastelands may be classified into the following :—

(1) Private lands,
(2) Government lands, and
(3) Common lands.

54. Information regarding the actual extent of wastelands according to the nature of ownership in respect of the different categories is not available. We were, however, informed that, of the total area of wastelands located for reclamation, about 60 per cent may belong to the Government, consequent on the acquisition of the zamindari lands, 20 per cent to private individuals, and the rest to the village panchayats.

55. The problems involved in the disposal of wastelands in each category of ownership are discussed below.

55.1. *Private lands*: The wastelands belonging to private individuals can be handed over, after reclamation, to the respective owners for follow-on cultivation. In respect of lands which require the adoption of soil conservation measures, we recommend that 25 per cent of the expenditure on contour-bunding may be treated as subsidy to be shared equally between the Centre and the State, and the balance may be advanced as loan to the cultivators to be recovered in equal annual instalments spread over a period of 10 to 15 years.

55.2. *Government lands* : Since the abolition of the zamindari system in West Bengal, large areas of wastelands formerly belonging to the zamindars now vest in the State under the Estates Acquisition Act. These lands may be allotted to landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc., who own less than two acres. It is further suggested that co-operative colonies of displaced persons from East Pakistan and landless labourers may be set up for bringing these lands under cultivation. A model settlement scheme is given in Appendix G.

55.3. *Common lands* : These lands, after reclamation, may be given back to the village panchayats for arranging follow-on cultivation.

Suggestions for effective utilisation of wastelands

56. We may now make a few suggestions for the effective utilisation of wastelands located in the districts of Midnapore, Purulia, Bankura and Jalpaiguri.

57. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the districts of Midnapore, Purulia and Bankura so that the lands are put to proper use. We understand that the State Government has set up the Land Utilisation Board, the main function of which is to conduct soil surveys for classifying lands on the basis of land-use capability. This Board can assist the State

Directorate of Agriculture in carrying out soil surveys of reclaimed areas. If necessary, the State Government may apply for financial assistance to the Central Soil Conservation Board for carrying out these surveys.

58. The execution of soil and water conservation projects on cultivators' holdings should, however, be the responsibility of the State Director of Agriculture. In order to carry out the large programme of soil conservation work indicated in the previous section, we recommend the setting up of a separate wing of soil conservation under the Superintending Engineer and Joint Director of Agriculture (Engineering). We further suggest that the State Government may appoint the senior soil conservation staff immediately, and arrange for their training at the centres organised by the Central Soil Conservation Board. The senior officers, in turn, will train the field staff. At present practically no specialised staff on soil conservation is available in the State for undertaking the programme of work suggested by us.

59. After soil conservation measures have been carried out, the responsibility for the follow-on cultivation should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisities.

60. Wherever irrigation facilities can be provided by the construction of shallow wells or tubewells, loans and/or subsidy may be given on a liberal scale to the cultivators.

61. The wastelands located in the districts of Midnapore, Bankura and Purulia are extremely poor in fertility. Sludge is now being transported from Calcutta for application to the reclaimed lands. We recommend that the concessions on the transport of sludge for manuring, if any, should be continued. Green manuring should be extensively practised in the reclaimed lands to build up their organic content and improve soil structure. The planting of *Ipomoea carnea, Sesbania speciosa,* etc. should be encouraged as the leaves and twigs of these plants are a useful source of green matter for application to the fields.

62. In the areas of the lateritic or red soil belt where irrigation facilities are not available, percolation tanks or earthen embankments across big gullies may be constructed to hold water. The construction of such tanks helps in the storage of water for agricultural and other purposes, and also checks erosion on the downstream side of the gullies. Such tanks have been constructed in the lateritic belt of Chotanagpur which extends into the districts of Midnapore, Bankura and Purulia, and have proved very useful for storing rain-water for irrigation and for cattle. Special financial provision for the excavation of percolation tanks to irrigate the reclaimed lands wil have to be made in the reclamation programme of the State.

63. In the Teesta *char* lands, there is abundance of sub-soil water and the water-level is also high. Advantage should be taken of the nearness of the sub-soil water from the ground-level to grow winter crops by adopting suitable cultivation practices. The water can also be pumped for irrigating crops grown at higher situations.

64. The *char* lands are fertile and the crop yields during the first two or three years after reclamation are generally very satisfactory even without the application of manures and fertilizers. It is necessary, however, that sound agronomic practices should be developed so that the fertility of these lands is maintained at a high level.

65. The general crop patterns recommended for the lands in the different categories are as under :—

65.1. *Category* 1 : The cropping pattern in the lateritic belt of Midnapore, Bankura and Purulia will vary according to the rainfall and the slope of the land. However, generally speaking, on the ridges, cashewnut may be grown. In the highly eroded lands, the plantation of sisal and *sabai* grass is recommended. In places where there is sufficient depth of the soil, crops like groundnut, kulthi (*Dolichos biflorus*), sweet potato, and millets like bajra and jowar can be cultivated. In the low-lying areas, highland paddy, maize, and groundnut may be grown as these crops have been found to grow well in the Kaleghai area of the Midnapore district.

65.2. In the Purulia district and parts of the Bankura district where the rainfall is less than 55" and where the soil is stony, the uplands may be reserved for afforestation. Crops like millets, kodo (*Eleusine coracana*) and niger may be grown in the slopy lands, and highland paddy, maize and groundnut in more or less level lands. Some of the blocks which are likely to receive irrigation from the Kangsabati project, may be double-cropped with paddy followed by wheat or pulses in the lower areas, while in the uplands sugarcane, maize, and jute can be grown followed by mustard and potatoes.

65.3. *Category* 11 : In the *char* lands of the river Teesta which have been reclaimed, good yields of crops are being obtained. In the areas where the cultivation of two crops can be gradually developed, a system of cropping consisting of jute and *aman* paddy, early *aus* and late *aman* paddy, and *aman* paddy and some suitable pulse or vegetable crop which can be sown in December, may be tried. Since the water-level of these lands is high, crops like sweet potato and other root crops can be grown in the *rabi* season.

65.4. *Category III* : In the flat lands belonging to category III, crops like jute, *aus* paddy and surgarcane may be grown after the addition of adequate quantities of manure. Mustard is generally grown in these areas in the *rabi* season after an interval of two to three years.

65.5. *Category IV* : In the saline lands of the Midnapore district, paddy can be grown as the land is fertile and the rainfall is about 70 inches. Suitable saline-resistant varieties of paddy should be evolved for growing in these lands.

Economic aspect of reclamation

66. We shall now examine the economic aspects of reclamation of the various categories of reclaimable lands in terms of additional production *vis-a-vis* the expenditure involved.

67. In the lateritic belt of the Midnapore and Bankura districts, sisal, *sabai* grass and cashewnut may be grown on a plantation scale in those lands which cannot be reclaimed, and are accordingly not fit for growing

food crops. An average yield of 5 maunds of sisal fibre per acre can be obtained for a period of ten years after the fourth year of planting. Assuming the price of the fibre as Rs. 45 per maund, the value of the fibre would be Rs. 225 per acre. The net return from an acre of sisal plantation would be about Rs. 90, after deducting Rs. 135 as the average annual expenditure on labour, maintenance and depreciation. In the case of *sabai* grass, which grows for five years and yields an annual harvest of 15-18 maunds, the value of the produce from an acre of plantation varies from Rs. 70 to Rs. 80. Similarly, the cultivation of cashewnut which is another crop suitable for growing in the uplands, gives a return of Rs. 300 per acre from the sixth year after planting, at the rate of 5 maunds of cashew kernels per acre.

68. In the lands where paddy can be grown, *aus* paddy is cultivated in high-lying lands, and early *aman* at lower situations. Maize and groundnut can also be grown. The average yield of paddy, maize and groundnut may be taken as 12, 10 and 15 maunds per acre, respectively. On a conservative estimate, the annual additional food production per acre (if other crops are grown, their equivalents in terms of food crops) may be assumed as 10 maunds.

69. In the Purulia district, a large proportion of the area is not fit for growing food crops. These lands are, however, ideally suited for growing sisal, cashewnut, *dhak* (*Butea frondosa*) and *kusum* (*Schleichera trijuga*). . The last two trees are the hosts of the lac insect. The production of lac is a remunerative secondary occupation of the cultivators in this district, and a family can earn as much as Rs. 500 per year. In the remaining area which is barely 30 per cent of the total area in the district, highland paddy (*aus*), maize, groundnut, millets and niger can be grown. The average additional production in terms of foodgrains may be estimated at 6-8 maunds per acre.

70. To sum up, the wastelands in category I which cannot be reclaimed for growing food crops, can be put under sisal, cashewnut and the hosts of the lac insect for the production of lac. The net return from an acre of land under non-food crops ranges from Rs. 100 to Rs. 200. In the lands where food crops can be grown, the average yield of paddy is about 12 maunds. On a conservative estimate, the additional food production over the entire area may be assumed as 8 maunds per acre (if other crops are grown, their equivalents in terms of food crops are taken into account).

71. The lands included in category II are very fertile and can produce good crops of paddy, sugarcane, jute, etc. These lands can be double-cropped and, even on a conservative estimate, we may assume additional food production at 30 maunds per acre.

72. As regards the lands in category III, these are poor in fertility because of their low water-holding capacity. At present only seasonal crops can be grown, and their yield is not likely to be more than 6 maunds per acre. With the augmentation of irrigation supply in these areas, crop yields would substantially increase.

73. The saline lands located in the district of Midnapore are capable of yielding 15 maunds of foodgrains after reclamation.

74. To assess the relative economic benefits of reclamation between the different categories of reclaimable lands, the figures of estimated additional food production should be studied in relation to the costs of reclamation and other relevant factors. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the additional food production and the cost of reclamation per maund of additional food production.

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TABLE I

Cost of reclamation of land in different categories and estimated additional production

Category	Description	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs. lakhs)	Additional production per acre (maunds)	Total additional production (maunds)	Value of total additional production (Rs. lakhs)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I	**Eroded lands**	85,379	120	102·61	8	6,83,032	81·96	96	15·0
II	***Char* lands**	12,594	100	12·59	30	3,77,820	45·34	360	3·3
III	**Flat (terai) lands**	13,869	100	13·87	6	83,214	9·98	72	16·6
IV	**Saline lands**	1,798	160	2·88	15	26,970	3·24	180	10·7
	TOTAL ..	1,13,640		131·95		11,71,036	140·52		

N.B.—The main food crops of the areas included in categories I to IV are paddy, maize, *kulthi*, millets and groundnut. A common price of Rs. 12 per maund is assumed.

75. It would be seen from the table that the cost of reclaiming 1,13,640 acres in categories I to IV comes to about Rs. 1.32 crores, *i.e.*, about Rs. 116 per acre. The estimated additional food production from the reclaimed lands is 42,895 tons valued at about Rs. 1.40 crores. The average cost of reclamation, therefore, is economic in terms of additional production, since the total expenditure involved can be recovered in one or two crop seasons.

76. As regards the economics of reclamation of the different categories of wastelands, category II seems to be the most profitable in terms of additinal food production per acre, *i.e.*, 30 maunds, for an expenditure of Rs. 100 per acre on reclamation. Although this is a definite advantage, the lands included in this category are subject to flood and erosion hazards, and the settlement on these lands is also precarious. On the other hand, category I offers the greatest promise for increasing agricultural production since large tracts of such lands are available in the districts of Midnapore, Bankura and Purulia, and the average cost of reclamation is also not high. Further, these areas are extremely suitable for undertaking resettlement projects for the rehabilitation of displaced persons from East Pakistan. The cost of reclamation of saline lands included in category IV is also economic, but the area available is very small. The wastelands in category III do not hold much promise for increased production, but the position will materially change when irrigation becomes available, for which there seem to be good prospects.

Priorities between different categories of reclaimable lands

77. We now come to the assignment of priorities between the four categories of reclaimable lands located in the State.

78. We recommend that the eroded lands included in category I may be assigned the highest priority in view of the following reasons :—

(*a*) Large tracts of eroded land are available in the State. These lands, when reclaimed, will materially assist in increasing agricultural production, and in settling local landless labourers, and displaced persons from East Pakistan whose rehabilitation is a matter of paramount interest to the State (In the light of his past experience, Mr. H. Banerji, Development Commissioner, West Bengal, is not in favour of settling displaced persons from East Pakistan on reclaimed lands in category I as the climate of Midnapore, Purulia and Bankura is very dry and thus not congenial to persons used to the humid climate of East Pakistan).

(*b*) Reclamation and resettlement projects in similar types of land are already in progress in certain parts of the Midnapore district, and the experience gained there will be useful in extending the operations to other areas with a greater degree of confidence.

78.1. Among the various blocks offered for reclamation in this category, those in the districts of Midnapore and Bankura may be taken up first followed by the blocks in Purulia. In particular, the wastelands located in the jurisdiction of the police stations of Salboni, Garbeta, Taldangra, Simlapal, Onda and Vishnupur may be assigned a high priority as these areas are likely to receive irrigation from the Kangsabati

Project. The lands located in the jurisdiction of the Sonamukhi police station are also very suitable as the soil is alluvium and irrigation can be provided by sinking shallow wells.

79. Next in the order of priority are the *char* lands included in category II. Although these lands are fertile and are capable of producing good crops of paddy, sugarcane, jute, etc., and the cost of their reclamation is also low, we have not assigned them a higher priority because of the flood and erosion hazards to which they are subject, and the difficulties of large-scale settlement in the areas.

80. The area included in category IV is small, but the lands are capable of producing good crops of paddy because of the alluvium nature of the soil. We suggest that these wastelands should rank third in the order of priority.

81. As regards the lands included in category III, these are poor in fertility and do not retain moisture for long, although they are located in an area with a rainfall of 120 to 180 inches. We understand that the exploratory tubewells in the area have proved successful, and that the work of installing tube-wells will be taken up during the Third Plan period. We, therefore, recommend that these lands should be reclaimed only when they are assured of irrigation supply.

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SECTION D

(Summary of general conclusions and recommendations)

1. Of the total area of 2.54 million acres under the head "other uncultivated lands excluding fallows" and "current fallows", about 1.13 lakh acres have been located in the State for reclamation in blocks of the sizes of 250 acres or more.

(Paragraph 15)

2. The wastelands found in the State may be broadly divided into following four categories :—

I—Eroded lands,
II—*Char* lands,
III—*Terai* lands (flat lands at the foot of the hills), and
IV—Saline lands.

(Paragraph 19)

3. The distribution of wastelands in categories I to IV is as under :—

Category	*Area* (acres)
I	85,379
II	12,594
III	13, 869
IV	1,798
TOTAL ..	1,13,640

(Paragraph 20)

4. The wastelands found in the districts of Midnapore, Purulia and Bankura falling in category I are mostly undulating, with large upland tracts made up of ridges alternating with valleys. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. Land reclamation in these areas is primarily soil and water conservation work. The average cost of reclamation would be Rs. 120 per acre.

(Paragraphs 43, 44 and 45)

5. It is necessary to introduce legislation on the lines of the model Act prepared by the Government of India and circulated to the State Governments, empowering the State Government to undertake soil conservation measures in the State.

(Paragraph 46)

6. The selected projects on soil conservation should be on a complete watershed basis.

(Paragraph 46)

7. Field experiments should be laid out to study the different methods of bunding in the lateritic and red soil tracts, with a view to determining as to which method should be adopted with special reference to its cost and effectiveness.

(Paragraph 46)

8. The *char* lands included in category II are very fertile and can produce good crops of paddy, sugarcane, jute, etc. The flood and erosion hazards make large-scale habitation in this area somewhat precarious, although settlements are possible at sites which are not subject to these hazards. The cost of removing the shrubs and bushes and ploughing up the land to make it fit for cultivation, is estimated at between Rs. 75 and Rs. 100 per acre.

(Paragraph 50)

9. The flat (*terai*) lands are very poor in nitrogen, phosphate, potassium and organic matter, and do not retain moisture for long, although they are located in an area with a rainfall of 120 to 180 inches. They are covered with shrubs and grasses. The cost of reclamation is estimated at Rs. 100 per acre.

(Paragraph 51)

10. The saline lands located in the Midnapore district are rich in organic matter and plant nutrients. Salinity in the lands is not high, but they are slightly eroded. To reclaim these lands, suitable ameliorative measures for the removal of salinity should be undertaken. The cost of reclamation is estimated at about Rs. 160 per acre.

(Paragraph 52)

11. The wastelands in the State are owned either by private individuals, the Government, or village panchayats. The wastelands belonging to private individuals can be handed over, after reclamation, to their respective owners for follow-on cultivation. In order to bring the lands belonging to the Government under cultivation, it is proposed to establish co-operative colonies of settlers from East Pakistan, or to allot these lands to the landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc. The common lands may be given to the village panchayats for arranging follow-on cultivation.

(Paragraphs 53, 54 and 55)

12. Detailed soil surveys for land-use should be carried out in each area proposed for reclamation, so that the requisite information on the proper utilisation of land is available.

(Paragraph 57)

13. In order to carry out the programme of soil conservation indicated in the report, we recommend the establishment in the Directorate of Agriculture of a separate wing of soil conservation under the Superintending Engineer and Joint Director of Agriculture (Engineering), who may be assisted by three Divisional Soil Conservation Officers and the necessary field staff.

(Paragraph 58)

14. After soil conservation measures have been carried out, the responsibility for the follow-on cultivation should be that of the normal staff of the Agriculture Department. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas.

(Paragraph 59)

15. Wherever irrigation facilities can be provided by the construction of shallow wells or tube-wells, loans and/or subsidy may be given to the cultivators on a liberal scale.

(Paragraph 60)

16. Green manuring should be extensively practised in the reclaimed lands in order to build up their organic matter content and to improve soil structure.

(Paragraph 61)

17. In the areas of the lateritic or red soil belt where irrigation facilities are not available, percolation tanks or earthen embankments across big gullies may be constructed to hold water. The construction of such tanks helps in the storage of rain-water for agricultural and other purposes, and also checks erosion on the down-stream side of the gullies.

(Paragraph 62)

18. In the Teesta *char* lands, advantage should be taken of the nearness of the sub-soil water from the ground-level to grow winter crops by adopting suitable cultivation practices.

(Paragraph 63)

19. Although the *char* lands are fertile, sound agronomic practices should be developed so that the fertility of these lands is maintained at a high level.

(Paragraph 64)

20. The total cost of reclaiming 1,13,640 acres of land in categories I to IV comes to Rs. 1.32 crores, *i.e.*, about Rs. 116 per acre. The estimated additional production from the reclaimed lands is 42,895 tons valued at about 1.40 crores. The average cost of reclamation is, therefore, economic in terms of additional production, since the total expenditure involved can be recovered in one or two crop seasons.

(Paragraph 75)

21. A study of the cost of reclamation of lands in the different categories reveals that category II is the most profitable in terms of additional food production. On the other hand, category I offers the greatest promise for increasing agricultural production since large tracts of such lands are available and the average cost of their reclamation is also not high. The cost of reclamation of saline lands is also economic, but the area available is small. The wastelands in category III do not at present hold much promise for increased production, but the position will materially change when irrigation becomes available, for which there seem to be good prospects.

(Paragraph 76)

22. The following is the order of priority assigned to the different categories of wastelands on the basis of all relevant factors :—

	Priority	
Category	I	1
Category	II	2
Category	IV	3
Category	III	4

(Paragraphs 77 to 81)

Members :

Sd.
(B. N. Uppal)

Sd.
(F. C. Gera)

Sd.
(J. P. Mital)

Sd.
(M. S. V. Rama Rao)

Co-opted Members :

Sd.
(H. Banerjee)
Development Commissioner.

Sd.
(B. N. Banerjee)
Superintending Engineer and Joint Director of Agriculture (Engineering).

Sd.
(A. Chatterjee)
Asst. Secretary, Land and
Land Revenue Department.

Sd.
(A. Das Gupta)
Dy. Secretary, Board of Revenue.

Sd.
(H. M. Brahma)
P.A. to Chief Engineer (Irrigation).

Sd.
(A. S. Venu Gopalan)
Secretary.

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APPENDICES

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,

SECRETARY.

NO. F. 1024/SPL/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, June 11, 1959

MY DEAR

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories :

(*a*) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis;* and

(*b*) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee:—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committe will consist of the following :—

(1)	Dr. B. N. Uppal Agricultural Commissioner Government of India.	Chairman
(2)	*Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India.	Member
(3)	Shri F. C. Gera, Chairman, Central Tractor Organisation.	Member
(4)	Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation.	Member

In addition, the Committee will co-opt in individual States the following officers :—

(1) The Development Commissioner;
(2) The Revenue Secretary;
(3) The Secretary of the Agriculture/Forest Department, or his nominee; and
(4) A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginnnig of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours sincerely,
(Sd.) K. R. DAMLE

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Government of India, was appointed a Member from the 3rd February 1960 *vide* Memo. No. 12-1/59-GMF (Co), dated the 3rd February, 1960 (copy enclosed)

No. 12-1/59-GMF(Co)

GOVERNMENT OF INDIA

MINISTRY OF FOOD & AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, the 3rd February, 1960

SUBJECT :—*Reclamation of culturable waste lands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may plase be made in regard to the Membership of the Committee as mentioned in D.O. No. F. 1024/SPL/59, dated the 11th June, 1959, referred to therein :—

"Shri M. S. V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,
in place of Dr. J. K. Basu since retired."

(Sd.) V. BALASUBRAMANIAN
Under Secretary

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Appendix 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee.

1. What is the total area of culturable wasteland in your State ?

(Culturable waste land is defined as under :—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands ?

3. What is the extent of land under miscellaneous trees and groves ?

4. What is the extent of fallow lands other than current fallows ?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement ? If so, how many such blocks ?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more ? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years ? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :

DISTRICT :

Details in respect of Block No.——————————————*consisting of* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the blocks? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the colonization operations in the block successfully?

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12. If so, what would be the likely cost of acquisition ?
13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted ?
14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.
15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors ? If the former, is adequate labour locally available ?
16. If there are no trees or weeds or shrubs & bushes on the land, is the land eroded ? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.
17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block ?
18. What is the type of soil in the block ? (alluviums, black, red or lateritic).
19. Is the land flat or gently sloping or steep ? What is the depth of the soil ?
20. What crops are grown in the area round about the block ?
21. What is the yield per acre of each crop ?
22. What is the nearest marketing centre for these crops ?
23. What is the extent and distribution of rainfall in the area ?
24. Can irrigation facilities be made available for the block ? If so, what kind of facilities ?
25. Whether these irrigation facilities will be perennial or non-perennial ?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year Plan will cover this land ?
27. What is the depth of sub-soil water ? Is water sweet or brackish ?
28. Are anti-malarial operations necessary in the area for successful colonization ?
29. Is any endemic disease prevalent in the area ? If so. do the State Government contemplate any measures to combat this disease ?
30. Is drinking water available in the block ?
31. Are there any drinking water wells in use ?
32. Is the area subject to depredations of wild animals ? If so, what animals ?
33. Is the block likely to attract settlers from distant places in the State or from other States ?
34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block ?

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35. Do you think educated unemployed could be successfully settled in the block ?
36. What should be the unit of allotment per settler ?
37. Would you suggest that the settlers should put up their homesteads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi ?*
38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on co-operative basis).
39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX 'C'

DR. B. N. UPPAL,
CHAIRMAN, WASTELANDS SURVEY
& RECLAMATION COMMITTEE.

D.O. No. F. /59-WLS & RC.

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
DEPARTMENT OF AGRICULTURE
'KRISHI BHAVAN'

New Delhi, January 2, 1960
Paus 12, 1881

DEAR SHRI

Kindly refer to my letter of even number dated the 10th August, 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable waste land in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in Appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term contiguous’ used in Appendix ‘A’ to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators’ holdings or some natural obstructions, it should be considered more or less compact or ‘contiguous’ so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,
(Sd.) B. N. UPPAL

All Liaison Officers
in the States and Union Territories.

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APPENDIX D

Average yield in maunds per acre of the principal crops in West Bengal (1959-60)

District/crop	Rice			Wheat	Barley	Gram	@Potato	Sugarcane	Rape and Mustard	*Jute	*Mesta
	Autumn (aus)	Winter (aman)	Summer (boro)								
24-Parganas ..	10·30	8·58	8·89	6·98	4·37	5·10	78·95	426·95	1·14	1·98	2·35
Nadia	10·17	5·82	11·42	6·01	5·00	6·53	63·19	488·14	4·97	2·65	1·83
Murshidabad ..	6·55	8·69	13·91	7·93	5·24	3·99	84·23	480·74	5·07	2·40	2·00
Burdwan	11·80	12·84	12·00	7·25	4·37	5·15	117·55	443·16	2·49	3·34	3·00
Birbhum	11·48	12·70	13·50	6·53	4·37	4·78	94·63	409·19	2·49	2·72	2·00
Midnapur	7·61	10·54	10·00	5·16	—	3·94	84·84	394·28	1·01	3·84	1·10
Bankura	9·50	12·28	9·50	6·13	4·37	3·47	83·35	331·86	2·49	2·72	1·25
Hooghly	11·56	11·21	9·00	9·01	4·37	4·21	136·41	532·09	2·49	3·23	2·50
Howrah	12·27	5·67	8·00	6·98	4·37	4·58	95·48	536·45	2·49	2·20	2·50
Jalpaiguri	6·02	11·85	8·00	6·98	4·39	4·58	37·93	368·79	1·34	3·38	2·20
Darjeeling	4·72	14·27	—	7·00	5·00	6·00	56·20	420·00	3·00	3·15	1·54
Malda	8·28	9·43	15·00	6·38	4·73	4·25	65·90	398·80	2·43	1·92	1·50
West Dinajpur ..	8·41	10·30	8·35	2·49	3·68	3·61	64·60	300·58	2·52	1·97	1·04
Cooch-Behar ..	4·41	9·87	10·00	10·55	4·37	4·58	71·37	368·79	1·13	3·06	2·25
Purulia	3·03	12·54	15·00	9·35	4·37	6·43	—	404·72	2·49	2·72	1·90
STATE ..	8·48	10·69	11·77	7·15	4·62	5·11	99·58	431·56	2·75	2·63	1·90

* Bales of 400 lbs. each.

@ Figures relate to the year 1958-59.

APPENDIX E

Land utilization statistics for West Bengal for the year 1956-57 *(district-wise)*

District	Total geographical area		Forests	Area not available for cultivation	Other uncultivated land excluding current fallows	Current fallows	Net area sown
	By professional survey	By village papers					
24-Parganas	36,30,200	36,30,200	10,53,000	6,35,000	2,50,000	67,200	16,25,000
Nadia	9,65,800	9,65,800	—	1,38,000	80,000	56,500	6,91,300
Murshidabad	13,26,100	13,26,100	—	1,83,700	90,000	1,20,600	9,31,800
Burdawn	17,31,500	17,31,500	31,600	3,38,400	1,16,600	49,200	11,95,700
Birbhum	11,15,500	11,15,500	6,000	1,75,000	41,000	78,300	8,15,200
Bankura	16,94,000	16,94,000	1,95,500	1,49,500	2,37,300	2,60,500	8,51,200
Midnapur	33,62,000	33,62,000	3,81,300	3,11,700	2,46,000	2,07,800	22,15,200
Hooghly	7,75,700	7,75,000	600	1,48,400	31,900	7,800	5,87,000
Howrah	3,58,500	3,58,500	—	87,000	12,100	35,300	2,24,100
Jalpaiguri	15,19,600	15,19,600	3,61,400	2,69,000	1,85,000	50,900	6,53,300
Darjeeling	7,67,800	7,67,800	2,90,800	1,84,500	49,000	26,000	2,17,500
Malda	8,90,900	8,90,900	—	89,000	51,000	41,400	7,09,500
West Dinajpur	8,86,700	8,86,700	—	1,45,500	38,700	18,100	6,84,400
Cooch-Behar	8,46,500	8,46,500*	—	1,11,700	85,800	10,100	6,15,800
TOTAL	1,98,70,800	1,98,70,800*	23,20,200	29,66,400	15,14,400	10,29,700	1,20,17,000

NOTE.—The statement does not include figures in respect of the territories transferred from Bihar to West Bengal as a result of reorganisation of States.

*Include 23,100 acres for which detailed agricultural statistics are not available.

APPENDIX F

Statement showing details of blocks in categories I, II, III and IV offered for reclamation in West Bengal

District	Name of Block	Block No.	Location of the block (Mouza)	Nearest Rly. Station	Accessible by fair/all-weather road	Whether included in C.D. Block	Area (acres)	Amount of rain-fall (inches)	Depth and nature of sub-soil water	Endemic diseases
1	2	3	4	5	6	7	8	9	10	11
					Category I					
Midnapur	Keshiary	1	Budhebudhi, Kulbani and Lanspal.	Contai Road	Fair weather	Yes	736	58-30 feet,	Sweet	No.
	Kharagpur	2	Kantasol, Patua, Sagpara and Kunisal Sadatpur, Raykelgeria Kalyan Protappur and Ratuasol.	Kharagpur	Fair weather	No	1,263	58-25 feet,	Sweet	No.
	Salboni	3	Balibundh, Perakuli Mathurapur, Bhutasol, Pirachak, Perakuli, Masru, Banskapua, Dubrajpur, Lengtisal and Brindabanpur.	Salboni	Fair weather	No	1,847	58-40 feet,	Sweet	Not known.
	Garbeta	4	*Vide* Appendix F(*a*)	Garbeta	Fair weather	No	7,863	58-40 feet,	Sweet	Not known.
	Chandrakona	5	Labgar	Chandrakona Road.	Fair weather	Yes	236	58-20-40 feet,	Sweet	No.
	Jhargram	6	Lalitasol, Barjudi, Dogerya, Indikhara, Dudkundi, Baradanga and Balia.	Jhargram	All weather	No	1,420	58-60-80 feet,	Sweet	Not known.

	Sankarail	7	Susamgeria, Sukhukhali, Bakra, Protappur, Moruisol, Katuimara, Itamara, Nischinda, Bhalkisol, Angarnath, Baidapura, Sushigerya, Atta Dihi and Sankrail.	Kalaikunda	All weather	No	2,808	58	30 feet,	Sweet	No.
	Binpur	8	Talpukuria, Agnibal, Dakai and Rangamatya.	Binpur	Fair weather	Yes	1,232	58	60-80 feet,	Sweet	Not known.
Purulia	Purulia	9	*Vide* Appendix F(*a*).	Purulia	Fair weather	No	19,000	50	30 feet,	Sweet	Not known.
	Jaipur	10	*Vide* Appendix F(*a*)	Jaipur	Fair weather	No	9,500	50	30 feet,	Sweet	Not known.
	Jhalda	11	Bamunia, Kanudi, Baraharka, Jhalda Barudi, Katsila and Jinduru.	Jhalda	Fair weather	Yes	500	50	30 feet,	Sweet	Not known.
	Para	12	Lepanya, Jaupara, Bangalia, Phusrabaia, Jaorberya, Kush gora and Jabarra.	Anara	Fair weather	No	7,500	60	30 feet,	Sweet	Not known.
	Hura	13	*Vide* Appendix F(*a*)	Purulia	Fair weather	Yes	5,000	50	30 feet,	Sweet	Not known.
	Burabazar	14	Bamandiha, Turku, Manpur, Shyamzola, Basudevpur, Rupapalia, Harunda, Lodiha, Tentuladi, Bajra, Raghunathpur, Bhuinayadihi, Baramukru, Rangagara, Roladi and Punhasa.	Purulia	Fair weather	No	1,750	50	30 feet,	Sweet	Not known.
	Kashipur	15	*Vide* Appendix F(*a*)	Adra	Fair weather	No	8,000	50	30 feet,	Sweet	Not known.
	Puncha	16	*Vide* Appendix F(*a*)	Purulia	Fair weather	Yes	6,000	50	30 feet,	Sweet	Not known.

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10	11
Bankura	Taldangra	17	Dauni, Chakmajuri, Kaniari, and Jamarboni, Joypur.	Bankura	Fair weather	Yes	1,376	50	16 feet, Sweet	Not known.
	Simlapal	18	Masatkhal, Rambani, Jamirdiha, Bagakulia, Akaria-Jamboni, and Bamanpatharia.	Bankura	All weather	Yes	1,145	50	16 feet, Sweet	Not known.
	Onda	19	Chagulia, Gopalpur, Etali, Krishnasingpur, Bhalukkhulia, Brindabanpur, Singhati, Ramarchuapuan, Kharibaribandhi, Chakuaijuri and Vedua.	Onda	All weather	Yes	6,100	50	16 feet, Sweet	Not known.
	Vishnupur	20	Hubmara, Chakuparsol, Chitrang, Chota Bangla Zaha, Dhaboni.	Vishnupur	Fair weather	No	875	50	16 feet, Sweet	Not known.
	Sonamukhi	21	Kenety, Nityanandapur Beleda, Amritpur, Besia, Bora and Plasura.	Piardoba	Fair weather	Yes	1,291	50	16 feet, Sweet	Not known.
					Category II					
Jalpaiguri	Mal	22	*Vide* Appendix F (*a*)	Odlabari, Lalaguri, Jalpaiguri, and Damohani.	Fair weather	No	12,594	156	5 feet, Sweet	No.

Category III

Jalpaiguri	Mavnaguri	23	Purba Saramati, Padamati Baikur, Gangaram, Brahmapur, Charchura Tandai, Jhartargila,	Bhotapatti, Madarganj	Fair weather	Yes	2,958	156	10 feet,	Sweet	No.
	Dhupguri	24	Prayagpur, Bagribari, Dambari and Dakshin Kharibari.	Banarhat	Fair weather	Yes	1,194	156	10 feet,	Sweet	No.
	Jalpaiguri	25	Barapatia, Natunbas, Patkata, Satkhamar, Nandanpur, Katchua, Boalmari and Berubari.	Belakoba	Fair weather	Yes	6,532	156	10 feet,	Sweet	No.
	Nagrakata	26	Dhumpara, Kalabari, -Hridaypur, Upper Kalabari, Tandu and Khairbari.	Nagrakata	Fair weather	No	2,241	156	10 feet,	Sweet	No.
	Alipurduar	27	Silbarihat & Patakhawa.	Alipurduar	Fair weather	No	568	156	10 feet,	Sweet	No.
	Falakata	28	Kunjanagar	Dolgaon	Fair weather	Yes	376	156	10 feet,	Sweet	No.

Category IV

Midnapur	Contai	29	Baguramjalpai, Mankaripur and Kanaichhata.	Contai Road	No Road		437	60	10 feet,	Sweet	No.
	Ramnagar	30	Satilapur, Bagunadiha Mukundapur, Madanmoni and Dakshin Purussattampur, Purba.	Contai Road	No Road	No	1,361	60	10 feet,	Sweet	No.

APPENDIX F(*a*)

*Statement showing the names of mouzas where wastelands have been located**

Garbeta

Chatadharampur,
Halia,
Jamsol,
Bankisol,
Sirisbani,
Kenkaroli,
Chatanakdanga,
Dubrajpur,
Lalitpur,
Damodarpur,
Telighat,
Kharkata,
Dhorgodaha,
Keshia,
Ledagamar,
Bedia,
Sahibdanga,
Bhula,
Taljangra-Khasjangal,
Godamoti,
Godamundi,
Kaibani,
Kadamdiha,
Jamua,
Madanbari,
Majumdim,
Harinasuli,
Kantagar,
Chakparbatipur,
Mohanpur,
Bansola,
Jadabbati,
Indrajitpuri,
Amsole,
Sakatai,
Pathaisol,
Namjata,

Purulia

Galbera,
Rudra,
Kalidasi,
Syamdasi,
Gondudhi,
Kanali,
Bauri,
Khajda,
Ghonga,
Bhuinadi,
Sibdi,
Gaugudi,
Amandi,
Chawelardi,
Digsili,
Amchuria,
Akarbad,
Kukurchirka,
Chakdhar,
Suklaza,
Purru,
Gobindpur,
Chituara,
Bansara,
Bundera,
Chipidi,
Tangida,
Peurua,
Kumiya,
Gurpa,
Paurusal,
Kundurka,
Chanchara,
Kantaldiha,
Sidpur,
Hutmura,
Kazcha,
Bhangra,
Chepra,
Golkumra,
Khatra,
Mamurjor,
Baguli,
Arita,
Agoya,
Nadra,
Baraseni,
Chunardihi,
Sindurpur,
Batikara,
Birolgaria,
Deuli,
Khushluka.

Jaipur

Dhabani,
Tunta,
Chilahi,
Kulara,
Ghaghari,
Jahajpur,
Khayartar,
Srirampur,
Uperkahan,
Barnadi,
Helkahan,
Bangidiri,
Karmatar,
Bansghar,
Rangad,
Patamjuri,
Rampur,
Beltar,
Bhebaidi,
Joypur,
Baragram,
Phujaria,
Rangamoti,
Chaitandi,
Agharpur,
Gunja.

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*In respect of a few blocks mentioned in Col. (4) of the statement *vide* Appendix F.

APPENDIX F(*a*)

Statement showing names of mouzas where wastelands have been located[*]

Hura

Jambad,
Nimdiha,
Chitra,
Dumdumi,
Joberra,
Ladurka,
Dumursol,
Guzda,
Saldiha,
Kapalkota,
Belalahal,
Bagdisha,
Susunia,
Saharjuri,
Kharihara,
Shyamaluta,
Kalaboni,
Piuza,
Khairepiza,
Deuli,
Kusumjuri,

Kashipur

Liya,
Majurjora,
Gopalpur,
Bhulandi,
Ghutlia,
Dharena,
Sunaido,
Simla,
Damandiha,
Sinlibari,
Bekhara,
Beladanga,
Tara,
Chatahartor,
Kalloli,
Gosaniah,
Luyaria,
Narayangar,
Kartikganj,
Bardaikheari,
Sidpur,
Jurguridi.

Puncha

Rajakhanda,
Dhabani,
Chandra,
Penchara,
Jambad,
Dharampur,
Pirra,
Maheshpur,
Bansa,
Matha Gopinathpur,
Kuruktopa,
Bhuban,
Chatalalpur,
Gangadi,
Kendadi,
Laoara,
Punura,
Panipather
Bhandarpoura,
Konapara,
Sourang,
Balakdi.

Mal

Purbatatgaon,
Paschim Tatgaon,
Sundari, Basat,
Kalagainly,
Saogaon,
Uttarphulbari,
Dakhin, Phulbari,
Hanskhali,
Dakhin Odlabari,
Odalbari,
Manabari,
Turibari,
Hai Hai pato,
Purba dimdmi
Kumlai,
Rajadanga,
Apalchano,
Purba doaigaon,
Champadaga,
Chengmalpat,
Chengmai,
Dangapa,
Dakshin Chengmari,
Purba Monamari,
Paschim Monamari,
Paschim Premgaunge,
Premgaunge Majiali,
Purba Premgaunge,
Paschim Sangapara,
Purba Sangapara,
Bausuta.

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[*] In respect of a few blocks mentioned in Col. (4) of the statement, *vide* Appendix F.

APPENDIX G

Model scheme for settlement of landless labourers or displaced persons from East Pakistan on a co-operative basis.

(a) APPLICABLE TO THE DISTRICTS OF MIDNAPORE, PURULIA AND BANKURA

Thousands of acres of eroded lands are lying uncultivated in the districts of Midnapore, Purulia and Bankura. Thirty large-sized blocks comprising a total area of 87,177 acres have been located in these three districts for reclamation. The lands are undulating, with large upland tracts made up of ridges alternating with valleys. The rainfall ranges from 45 to 55 inches. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. Contour-bunding and terracing are the main problems of land reclamation in these areas. The average cost of reclamation is Rs. 120 per acre.

It is proposed to settle on these lands refugees from East Pakistan, or landless labourers on a co-operative basis. The settlement scheme has been modelled on the work already in progress in the State, and gives in broad outline the different steps to be taken for establishing colonies of settlers co-operatively. It is not intended to present a rigid scheme since the flexibility of details to suit local conditions is the *sine qua non* of the success of settlement schemes.

The co-operative method of organisation can be applied in settlement work in the following manner :—

(*i*) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members, and

(*ii*) Land may be owned individually but jointly-operated (that is, co-operative joint farming).

In organising the societies, the viability and mutual knowledge and confidence which strengthen the co-operative character, should receive due weight. The broad outline of each of these patterns are indicated below.

Pattern I : Individual farming with the help of a service co-operative.

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It may be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the society. The co-operative caters to the needs of the members, particularly those relating to credit for agricultural production, and supplies of agricultural requisites such as fertilizers, improved seeds, insecticides, etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land : The unit of land to be allotted to each settler's family may be as under :—

(*i*) Midnapore and Bankura districts	3 acres of upland and 3 acres of lowland
(*i.*) Purulia district	4 acres of upland and 4 acres of lowland

The allottees will have the right to alienate their lands after they have paid back all the advances made to them by the Government. The land to be granted to each settler should be on impartible tenure. As the lands are not initially fit for cultivation and will entail expenditure on reclamation, land revenue may be charged as follows : first year, no land revenue; second year, 1/3 of the assessed land revenue; third year, 2/3 of the assesed land revenue; and fourth year and onwards, full land revenue. It should be obligatory on the part of the allottee to cultivate the land himself or with the help of his family members.

Method of working : Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 20 per member. This amount will be repayable in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the member concerned as and when needed. The society, if desired by the members, may also provide domestic requirements against their deposits.

One agricultural officer will supervise the work of a group of five societies. He will assist each society in drawing up a production plan, and all the agricultural operations shou'd be carried out by the members in accordance with this programme. The society will supply fertilisers, improved seeds etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialised staff will be made available by the State Government.

Social amenities

(i) *Homestead* : About 1/6th of an acre of land may be allotted as a homestead plot. The value of the plot is estimated at Rs. 75.

(ii) *House building* : A sum of Rs. 500 may be advanced to each family towards the cost of building a house.

(iii) *Provision of drinking water* : One hand-pump for lifting drinking water may be provided for 30 families, and one ring-well for each group of four hand-pumps. The cost per family on this account will be Rs. 60.

(iv) *School* : For a colony of 50 families, provision may be made for a school. The capital cost of building will be Rs. 3,000 and the recrurring expenditure on running the school will be Rs. 1,000 per year. The cost per family on this account will be Rs. 100.

(v) *Dispensary* : Provision for a dispensary may be made for each colony. The cost of establishing a dispensary will be Rs. 5,000. The cost per family will be Rs. 100.

Reclamation charges : The cost of reclaiming land in the Midnapore and Bankura districts is Rs. 100 per acre; it is Rs. 130 per acre in the Purulia district. As the unit of allotment per family is 6 acres in the former two districts, and 8 acres in the latter district, the cost of reclamation per family will be Rs. 600 fot settlers in the Midnapore and Bankura districts, and Rs. 1,040 for settlers in the Purulia district.

Follow-on cultivation charges : The following amounts will be required per family for meeting the follow-up cultivation charges :—

(*i*) Sisal cultivation—Rs. 565 in the first four years.

(*ii*) Paddy cultivation—Rs. 546 towards the cost of seed, fertilizers (including sludge, bonemeal) and for undertaking cultivation operations. In addition, a sum of Rs. 405 will be required for the wages of labourers for carrying out cultivation operations for paddy crop.

Provision for Rs. 750 may be made for a pair of bullocks, a bullock-cart and implements.

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Besides sisal and paddy, other crops, such as cashew-nut, *sabai* grass, maize, groundnut, etc., can also be grown. The provision made above against sisal and paddy cultivation will be quite adequate to meet the expenditure on these crops.

Maintenance expenditure : During the first few years when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. Provision for maintenance charges may be made for a period of 13½ months, i.e., four months in each year for the first three years, and 1½ months in the fourth year. The amount to be provided is Rs. 50 per month per family, or a total of Rs. 675 per family during the first four years.

Administrative set-up : A sum of Rs. 50 (one Manager on Rs. 100 p.m. *plus* D.A. and one-fifth the pay of Agricultural Officer at Rs. 200 p.m. *plus* D.A. Approximately, Rs. 2,500 for each colony) will be spent per family towards the administrative set-up for the execution of the settlement scheme.

To sum up, the details of expenditure per family on the various items will be as under :—

	Midapore & Bankura districts	Purulia district
	Rs.	Rs.
Value of land	700	700
Reclamation charges	600	1,040
Follow-on cultivation charges	2,266	2,266
Social amenities	835	835
Maintenance expenses	675	675
Administrative set-up	50	50
TOTAL	5,126	5,566

Pattern of assistance : Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as under :—

I. *Individual members*

	Loan Rs.	*Grant* Rs.
(*a*) Share capital	20	—
(*b*) Homestead plot and house	575	—
TOTAL	595	—

II. *Through the co-operative society*

(*a*) Drinking water supply	—	60
(*b*) School	—	100
(*c*) Dispensary	—	100
(*d*) Cottage industry	200	—
(*e*) Reclamation charges	—	*600 or 1,040
(*f*) Maintenance expenses		675
(*g*) Follow-on cultivation		
(i) Bullocks and implements	750	—
(*ii*) Cultivation charges including cost of seed, plant materials manual labour etc.	1,516	—
(*h*) Administrative set-up	—	50
TOTAL	2,466	1,585 or 2,025

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*Rs. 600 for settlers in Midnapore and Bankura districts, and Rs. 1,040 for settlers in Purulia district.

The loans for cultivation charges, seed and manure in the case of paddy, groundnut, maize and other seasonal crops will be interest-free and recoverable after the harvest. The loans for plant material, its planting and care in the case of sisal, *sabai* grass and cashewnut will also be interest-free, but recoverable one year after the crops begin to yield.

The loans for bullocks, implements, etc. should be recovered from the third year in five annual instalments with the rate of interest as for *taccavi* loans.

The loans for the homestead plot and house building should be recovered from the fifth year in 15 annual instalments with the rate of interest as for *taccavi* loans. No interest should be charged in the first four years. The loans for cottage industry will be recovered one year after the settler begins to get returns from the industry, and in five annual instalments with the rate of interest as for *taccavi* loans.

The occupancy price of land which should be equal to three times the assessment should be paid from the sixth year in five annual instalments.

Pattern II : Individually owned but jointly operated

The cooperative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land

The scale of allotment of lands to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

Method of working

The society will formulate a production plan through its elected Managing Committee. The Committee may formulate the day-to-day working plan for the members, either by forming some special groups or on an *ad hoc* basis. The means of cultivation, *i.e.* seeds, fertilisers, implements, bullocks, etc. will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidies received from the Government towards the wages of labour, maintenance charges, etc. would be availed of for this purpose. The crop would be jointly harvested, and the income would be disbursed among the members after deducting the expenditure incurred by the society.

The Agricultural Officer attached to a group of five societies will provide the necessary technical guidance with regard to the formulation of the production programme, rotation of crops, use of fertilisers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the Society would keep the necessary accounts, etc.

The social amenities reclamation charges, follow-on cultivation charges, maintenance expenditure, administrative set-up for the organisation of scheme will be the same as in Pattern I.

This pattern will also facilitate the undertaking of the follow-on cultivation.

Pattern of assistance

All the assistance, except loans for homesteads and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

(b) APPLICABLE TO *char* LANDS IN JALPAIGURI DISTRICT

A block comprising an area of 12,594 acres of *char* lands has been located in the district of Jalpaiguri for reclamation. The entire terrain of *char* lands is a flood plain formed by the deposition of sediments on the bed of the river Teesta. The lands are more or less flat and incline uniformly with a low gradient in all directions. The water-table of the land is high, and the entire soil-depth is within the zone of capillary fringe. The soil thus remains moist throughout the year. The area receives a rainfall of about 140 inches. The cost of reclamation is between Rs. 75 and 100 per acre.

As in the case of the districts of Midnapore, Bankura and Purulia, the co-operative method of organisation in connection with the seetlement of *char* lands can be in the following manner :—

(*i*) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members, and

(*ii*) Land may be owned individually but jointly-operated (that is, co-operative joint farming).

As the details of both the patterns of land settlement have already been given for the districts of Midnapore, Purulia and Bankura, it is not necessary to repeat those details, except to indicate the figures under each of the separate heads. These details are as under :—

Pattern I : Individual farming with the help of a service co-operative

Allotment of land : The unit of allotment to each settler may be 4 acres of *char* land.

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Social amenities

(i) Homestead : About 1/6th of an acre may be allotted as a homestead plot. The value of the plot is estimated at Rs. 15.

(ii) *House building* : Rs. 500 may be advanced as loan.

(iii) *Provision of drinking water* : One hand-pump for lifting drinking water for 40 families. The cost per family on this account will be Rs. 30.

(iv) *School* : For a colony of 50 families, provision may be made for a school. The capital cost of building will be Rs. 3,000 and the recurring expenditure on running the school will be Rs. 1,000 per year. The cost per family on this account will be Rs. 100.

(v) *Dispensary* : Provision for a dispensary may be made for each colony. The cost of establishing a dispensary will be Rs. 5,000. The cost per family will be Rs. 100.

Reclamation charges : The cost of reclamation of *char* land is Rs. 100 per acre. As the area allotted to each family is 4 acres, the cost per family on this account will be Rs. 400.

Follow-on cultivation charges : A loan of Rs. 700 will be advanced to each settler for the cultivation of crops. In addition, a sum of Rs. 400 will be required for the wages of labourers for carrying out cultivation operations.

Provision for Rs. 750 may be made for a pair of bullocks, implements, etc.

Maintenance expenses : Provision for maintenance expenses may be made for one month only in order to help the settler to establish himself.

Administrative set-up : A sum of Rs. 50 (Manager at Rs. 100 per month *plus* dearness allowance and 1/5th of the pay of Agricultural Officer at Rs. 200 per month *plus* dearness allowance. Approximately, Rs. 2,500 for a colony) will be spent on each family for the execution of the scheme.

To sum up, the details of expenditure per family on the various items will be as under :—

	Rs.
Value of land	400
Reclamation charges	400
Follow-on cultivation charges	1,850
Social amenities	745
Maintenance expenses	50
Administrative set-up	50
TOTAL ..	3,495

Pattern of assistance : Financial assistance for implementing the scheme to be given to individuals and to the co-operative society should be as under :—

I. *Individual members*

	Loan Rs.	*Grant* Rs.
(*a*) Share capital	20	—
(*b*) Homestead plot and house	515	—
TOTAL ..	535	—

II. *Through the co-operative society*

	Loan Rs.	*Grant* Rs.
(*a*) Drinking water supply	—	30
(*b*) School	—	100
(*c*) Dispensary	—	100
(*d*) Reclamation charges	400	—
(*e*) Maintenance expenses		50
(*f*) Follow-on cultivation		
(i) Bullocks and implements	750	—
(ii) Cultivation charges	1,100	—
(*g*) Administrative set-up	—	50
TOTAL	2,250	330

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The loans for cultivation charges, seed and manure will be interest-free and recoverable after the harvest.

The loans for bullocks, implements, etc. should be recovered from the third year in five annual instalments with the rate of interest as for *taccavi* loans.

The loans for the homestead plot and house building should be recovered from the fifth year in ten annual instalments with the rate of interest as for *taccavi* loans. No interest should be charged in the first four years.

The occupancy price of land which should be equal to three times the assessment should be paid from the third year in five annual instalments.

Pattern II : *Individually owned but jointly operated*

The unit of allotment, method of working and the pattern of assistance have already been indicated in the scheme for the Midnapore district. The remarks made there apply here also.

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REPORT
ON
LOCATION AND UTILISATION
OF
WASTELANDS IN INDIA

PART II— WEST BENGAL

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WASTELANDS SURVEY AND RECLAMATION
COMMITTEE
(MINISTRY OF FOOD AND AGRICULTURE)

SEPTEMBER, 1960

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories:—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis*, and

(*b*) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June, 1959, (Appendix A) with the following terms of reference:—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclamable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting necessary information, and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of Work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies

should be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz.*, Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on cultivation and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under:—

(*i*) forests,
(*ii*) barren and unculturable lands,
(*iii*) land put to non-agricultural uses,
(*iv*) permanent pastures and meadows,

(*v*) areas under miscellaneous trees and crops,
(*vi*) culturable waste,
(*vii*) current fallows,
(*viii*) fallows other than current fallows, and
(*ix*) net area sown.

The lands classified under categories (*iv*), (*v*) and (*vi*) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2-5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for in any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the different State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wasteland available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics, and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is

not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PREFACE

The report deals with the availability and location of wastelands in large-sized blocks in the State of West Bengal and the measures to be taken for their reclamation.

2. With a view to gaining some knowledge of the wastelands found in the State, we undertook a tour of the Midnapore district on the 6th and 7th March, 1960, and visited the Garbeta and Kaleghai areas where some reclamation and resettlement schemes undertaken by the State Government were in progress. We had discussions with the Liaison Officer of the State on the 8th March and later on the 4th April, 1960, regarding the availability of wastelands in the State and the problems connected with their reclamation and disposal. On the 17th September, 1960, the draft report of the Committee was discussed and finalised.

3. We wish to thank Shri B. N. Banerjee, Superintending Engineer and Joint Director of Agriculture (Engineering), Government of West Bengal, who, in his capacity as Liaison Officer, furnished the necessary data required by the Committee. Our thanks are also due to Shri K. S. Banerjee, Special Officer (Rehabilitation), Garbeta Rehabilitation Scheme, Government of West Bengal, for the valuable assistance rendered by him in connection with the Committee's work.

4. We are highly indebted to Dr. S. P. Raychaudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities at the cartographic laboratory of the Institute in printing the maps included in the Report.

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Part II

West Bengal

SECTION A

(General aspects)

General aspects

The State of Bihar is divided into 17 districts, *viz.*, Ranchi, Hazaribagh, Palamau, Singhbhum, Dhanbad, the Santhal Parganas, Gaya, Monghyr, Shahabad, Bhagalpur, Purnea, Saharsa, Darbhanga, Patna, Saran, Champaran and Muzzafarpur. The geopraphical area of the State is about 67,000 sq. miles.

2. The population of the State, according to the 1951 census, is 3,87,83,778, which gives an average density of 578 persons per sq. mile as against 287 persons for the country as a whole. The rural population constitutes 93 per cent of the total population of the State. The population of the Scheduled Castes, the Scheduled Tribes and Backward Classes is 1.47 crores.

3. Based on the physical features, the State can be broadly divided into the following three regions :—

(*i*) North Bihar,
(*ii*) South Bihar, and
(*iii*) Hilly region of South Bihar.

4. The North Bihar region comprises the area between the Himalayas in the north and the Ganges in the south. The Gangetic depression is probably the bed of an ancient sea, now filled up with the alluvial deposits. The Gandak, the Kosi and a number of small rivers divide the alluvial plain to the north of the Ganges into belts of varying fertility. The soil is sandy alluvium. There is a calcareous belt in the west, and broken up areas in the middle, which are flooded during the year.

5. The South Bihar region covers the alluvial tract between the Ganges in the north and the hills in the south. The soils are of different colours and texture, varying from light greyish loams to heavy black clay. The middle portion of this tract is flooded during the monsoon, and presents the appearance of a lake.

6. The hilly region of South Bihar consists of plateaux and mountains which are the eastern terminations of the Satpura-Vindhya range. Three rivers take their origin here, *viz.*, The Narbada, the Sone and the Mahanadi. The terrain is broken up into uplands alternating with valleys. The uplands are reddish in colour, porous and acidic. These lands are suited for afforestation and for planting sisal, cashewnut and *sabai* grass. Upland paddy can also be cultivated in these lands. The low-lands are darker, clayey and neutral, and have immense soil depth. Laterite occurs as a cap on higher plateaus, but is also found in fair thickness in some valleys. In most cases it appears to rest directly on gneiss or felspatic granite.

Climate

7. The annual rainfall in North Bihar ranges from 50 to 70 inches, while in South Bihar, it is slightly lower and varies from 40 to 60 inches. Most

of the rainfall occurs during the period June to October. Maximum summer temperature is recorded during April-May (107° —116°) and the climate is extremely humid as heavy showers accompanied by thunder are experienced during this period. The relative humidity is maximum (85 per cent) in the Purnea district, where the rainfall is also high (65″). The remaining tract has an average humidity ranging from 66 to 77 per cent. Minimum temperatures (34°—49 F.) are recorded in February-March.

Soils

8. The soils of Bihar can broadly be classified as under (*vide* Map I) :—

(*i*) Alluvial soils to the north of the Ganges,

(*ii*) Alluvial soils to the south of the Ganges, and

(*iii*) Soils formed on parent rocks.

A brief description of these soils and some of their features are given below.

8.1. *Alluvial soils to the north of the Ganges.* These soils are found in the Tirhut and Bhagalpur divisions of the State. The north-western and central parts of this tract have highly calcareous zones. In general, the lime content of these soils varies from 0.5 to 25 per cent. The pH of these soils is above 8 where their lime content is high. The soils are rich in total and available potash, but are deficient in phosphoric acid.

8.2. *Alluvial soils to the south of the Ganges.* These soils are found in the districts of Patna and Shahabad. They are somewhat heavier but finer in texture than the alluvial soils to the north of the Ganges. The calcium content is lower as compared with the latter soils. The soils are almost neutral in reaction, but become acidic towards the south-western part of the belt. They are rich in total and available potash.

8.3. *Soils formed on parent rocks.* These soils are found in parts of South Shahabad, South Monghyr, South Bhagalpur, the Santhal Parganas, Ranchi, Hazaribagh, Singhbhum and Manbhum. They are markedly acidic in reaction, their pH varying from 5 to 6.8. A distinctive feature of these soils is that they have a high percentage of ferrous oxide (Fe_2O_3) as compared to aluminium oxide (Al_2O_3). They have low calcium content. They are deficient in nitrogen and phosphoric acid, but contain enough available potash. The important tracts of these soils are as under :—

8.3.1. Chotanagpur plateau comprises the hilly districts of Ranchi, Hazaribagh, Palamau, Singhbhum and Dhanbad. The land surface is rugged and uneven, varying from flat lands to almost steep slopes. The gradual slopes have been developed into terraced paddy fields. As the soils of this tract have developed from rocks of different geological origin, they show wide variations in age and composition. The upland soils are usually red, brown, brownish red, reddish yellow or brownish yellow in colour. The brick red soils of the uplands indicate the loss of B horizon and the exposure of C horizon on the surface. The soils of the lowlands are dark grey or greyish brown in colour. The soils of Chotanagpur are generally poor; they are deficient in nitrogen, phosphate, calcium and magnesium. Their potash status is medium. There is, however, an intricate process of change from exchangeable to non-exchangeable potassium in the potash nutrition of plants grown in these soils, with the result that many of these soils respond well to potash manuring. The application of lime is necessary for improving acid soils.

8.3.2. In the Upper Damodar Valley catchment, which is the hilly terrain of the Chotanagpur plateau and has an area of 6,960 sq. miles, the predominant soil type is red loam. These soils have a characteristic reddish tinge, and exhibit a tendency towards laterisation. They are highly eroded, and are neutral to acidic in reaction. They are deficient in organic matter, nitrogen and available phosphoric acid, but their potash content is usually high. They have a tendency to fix phosphorus when phosphatic fertilizers are added. The soils are shallow with light permeable top soil underlain by mottled concretions of quartz and iron oxide.

8.3.2.1. The other soil type found in the Upper Damodar Valley catchment is the calcareous soil, which has dark grey coloured top soil occurring as irregular patches. These soils are neutral to alkaline in reaction. They are deeper and heavier in texture than the red loam. They have low permeability due to poor structure, high clay content and often clay pans in the sub-soil. The phosphatic fertilisers, when applied to these soils, generally become fixed and consequently are not available to the plants. Some of these soils occurring in the northern portion of the Damodar Valley catchment are covered with forests, and are known as forest soils.

9. The important crops grown in the different soil zones are as below :—

Soil zone	*Crops*
Alluvial soils to the north of the Ganges ..	Paddy, wheat, barley, early maize, marua, (*Eleusine coracana*), gram, sugarcane, mustard, potato, jute, (mainly in the Purnea district), tobacco.
Alluvial soils to the south of the Ganges ..	Wheat, paddy, maize, gram, sugarcane, *arhar* (*Cajanus cajan*).
Soils formed on parent rocks	Wheat, paddy, maize, kodo, marua, jowar, bajra, gram, *arhar*, *til*.

10. The gross irrigated area in the State during the year 1957-58 was 4.7 million acres, out of the total cropped area of 23.67 million acres, representing about 20 per cent of the cropped area. The main source of irrigation in the State is canals, covering 1.63 million acres or 35 per cent of the gross irrigated area. Tanks account for about 6.5 lakh acres, and tubewells and other sources about 7 lakh acres. The major crops grown under irrigation are rice, wheat, barley and sugarcane.

Natural vegetation, crops grown and yields obtained

11. In the sub-Himalayan tract in Bihar, moist, deciduous forests occur. The main species are *Bombax malbaricum, Adina cordifolia, Lagerstroemia parviflora, Terminalia belerica, Lannea grandis, Cassia, fistula, Randia* sp., *Adhateda visica, Helocteres isora, etc.* In South Bihar, pure sal (*Shoera robusta*) and mixed sal forests constitute the major vegetation. In the lateritic and red soil areas of South Bihar, scrub jungle and thorny bushes cover the land, the important species being *Strychnos nux-vomica, S. potatorum and Diospyros melaneseylan.* The common weeds and grasses are *Cyperus rotundus, Cynodon dactylon, Eupatrium, etc.*

12. Rice is the main crop of the State. Of the cropped area of 24.48 million acres during the quinquennium 1953-54 to 1957-58, rice occupied about 12.07 million acres, representing 50 per cent of the total cropped area. It is classified as autumn and winter crop. The bulk of the area

under rice is contributed by the districts of Gaya, Shahabad, Champaran, Muzaffarpur, Purnea, the Santhal Parganas and Ranchi. Its total production during the same period was 3.1 million tons, making the State one of the largest rice producing areas in the country. Wheat, maize, gram and barley are the other food crops of importance in the State. The total production of wheat was 3.0 lakh tons, of maize 3.3 lakh tons, of gram 2.2 lakh tons, and of barley 1.8 lakh tons. Among the commercial crops, jute and sugarcane are the most important, their production being 6.8 lakh bales and 3.1 lakh tons of *gur,* respectively.

13. The average yields of important crops grown in the different districts during 1957-58 are tabulated in Appendix D.

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SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

14. The total area of 42.82 million acres in the State has been classified as below in accordance with the land utilisation statistics for the year 1957-58 :—

	Acres (million)
(1) Forests	9·67
(2) Land not available for cultivation—	
(*a*) barren and unculturable land	1·92
(*b*) land put to non-agricultural use	3·51
(3) Other uncultivated land excluding fallows—	
(*a*) culturable waste	2·28
(*b*) permanent pastures and other grazing lands	0·55
(*c*) land under miscellaneous tree crops and groves	0·00
(4) Current fallows	4·94
(5) Fallows other than current fallows	2·01
(6) Net area sown	17·94
TOTAL ..	42·82

15. It would be observed that the total area classified as "other uncultivated lands excluding fallows" is 2.83 million acres, and the area classified as "fallows other than current fallows" is 2.01 million acres. The district-wise distribution of the area under each of the above heads is given in Appendix E.

16. Of the total area of 4.84 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", "culturable waste"—the main head under which wastelands are recorded—comprises 2.28 million acres. The other important group which includes wastelands is "fallows other than current fallows". This latter group comprising 2.01 million acres mainly includes areas which are situated in the lateritic belt of South Bihar and the Chotanagpur plateau. Because of their poor fertility, these lands are used to grow an upland crop of *kulthi* (*Dolichos biflorus*) *or marua* (*Eleusine coracana*) once in 3 to 4 years. The cultivators plough up these lands along the slope, and the small furrow channels thus formed increase the rate of soil erosion, eventually leading to the formation of gullies and thus rendering the land unfit for cultivation. In this way large areas of cultivable land are going out of cultivation every year.

17. In order to find out the extent of wastelands in South Bihar and the Chotanagpur plateau a sample survey was carried out by the State Government in the districts of Gaya, Dhanbad, Monghyr, the Santhal Parganas and Hazaribagh. In this survey, an area of about 180 sq. miles along the main roads in these districts was covered. It was found that, out of an area of 1,21,000 acres surveyed, about 48,000 acres were lying waste and could be reclaimed and made fit for cultivation. These results indicate the existence of large areas of wastelands which can be economically reclaimed. These areas are, however, interspersed with cultivated fields.

18. In the two groups of wastelands referred to in para 16 above, about 89,000 acres in blocks of 250 acres or more have been located for reclamation. When we enquired about the reasons for the comparatively small area located for reclamation, it was stated that the information furnished to us related only to such blocks of wastelands as could be surveyed by the district authorities with the help of the local staff, although (according to the estimate of the State Government) over two million acres of wasteland in sizeable blocks were available in the lateritic belt of the State.

Availability of wastelands

19. Broadly speaking, the wastelands offered for reclamation in the State can be divided into the following two categories :—

I—Eroded lands located in the lateritic belts of South Bihar and the Chotanagpur plateau, and

II—*Terai* lands (lands infested with pernicious grasses such as *kans, pater,* etc.).

20. The distribution of wastelands in categories I and II in the different districts is given below :—

District	Area available in category (acres)		Total (acres)
	I	II	
Ranchi	2,445	--	2,445
Palamau	2,070	—	2,070
Singhbhum	6,380	—	6,380
Dhanbad	3,256	—	3,256
Santhal Parganas	12,948	—	12,948
Gaya	2,295	—	2,295
Monghyr	6,823	—	6,823
Bhagalpur	9,448	—	9,448
Hazaribagh	11,731	—	11,731
Darbhanga	—	14,800	14,800
Saharsa	—	10,500	10,500
Purnea	—	5,959	5,959
TOTAL	57,396	31,259	88,655

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21. Map II shows the location of blocks of wastelands in categories I and II.

Category I

Details of blocks in different categories

22. One hundred and one blocks comprising a total area of 57,396 acres have been located for reclamation in this category as per details given below :—

District	Block No.	Area (acres)
Ranchi	1—4	2,445
Palamau	5—12	2,070
Singhbhum	13—14	6,380
Dhanbad	15—19	3,256
Santhal Parganas	20—44	12,948
Gaya	45—46	2,295
Monghyr	47—52	6,823
Bhagalpur	53—71	9,448
Hazaribagh	72—101	11,731

23. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

24. *Blocks* 1—4. These blocks are situated in villages Rato, Tendor, Tirla, Jhiri, Hotwar, Tengar, Dumardaga, Katuaga, in the Ranchi Sub-division, and form part of the Ratu and Kanke Community Development Blocks. The soil is lateritic, with slopes varying from 2 to 8 per cent. The area receives a rainfall of 45—50 inches. No irrigation facilities are available.

25. *Blocks* 5—12 comprising 2,070 acres are located in villages Kedal, Utari, Khutaharia, Delua, Ratnagara, Rajhara and Kokhama, in the Palamau district. A portion of the block is infested with shrubs and bushes and will need to be cleared, while in the remaining area soil conservation measures will have to be undertaken for its reclamation. The soil is lateritic. The area receives a rainfall of about 50 inches. No irrigation is available.

26. *Block* 13 is a fairly big block comprising 6,000 acres. It is located in village Saparum, which falls in the jurisdiction of the Ichagarh police station, in the Singhbhum district. The soil is lateritic, with slopes varying from 2 to 6 per cent. The area receives a rainfall of about 55 inches. Irrigation can be provided in the area by pumping water from the adjoining river.

27. *Block* 14 comprsing 380 acres is located in village Mauza Saparum, in the Singhbhum district. The details regarding soil and rainfall are the same as for block 13. No irrigation is available.

28. *Blocks* 15—19 are located in the Dhanbad district, and form part of the Dhanbad and Gobindpur Community Development Blocks. The soil is lateritic. A large part of the area consists of uplands with gentle slopes. The depth of the soil varies from 9 inches to 3 feet. The area receives a rainfall of about 50 inches. No irrigation is available.

29. *Blocks* 20—44. The actual location of the different blocks may be seen in Appendix F. Practically all the areas, except those located in the Deoghar Sub-division, form part of the Nala and Jamtara Community Development Blocks. The soil is lateritic with gentle slopes. The area receives a rainfall of 40 to 45 inches. No irrigation is available.

30. *Blocks* 45-46 are located in the jurisdiction of the Sherghatti police station, and form part of the same C. D. Block. The soil is lateritic with gentle slopes. The area receives a rainfall of about 45 inches. Irrigation will be available in these blocks from the Lilajan Irrigation project which has already been executed.

31. *Blocks* 47—49 are located in the jurisdiction of the Jhaja and Chakai police stations. Blocks 48 and 49 form part of the Chakai Community Development Block. The soil is lateritic, and the lands are badly eroded. The area receives a rainfall of about 50 inches. In block 47, irrigation can be provided from the main canal of the Nagi Dam, while for the other two blocks, there are no facilities for irrigation.

32. *Blocks* 50—52. The area of block 50 is spread over nine villages which are situated at a distance of four miles from Jhaja, while block 51 is located at a distance of about 8 miles from the same place. Block 52

is located in villages Mohanpur, Mungrar and Kurla, in the Monghyr district. The soil is lateritic. The land is rolling, and the soil depth varies from 1 to 3 feet. The area receives a rainfall of about 50 inches. No irrigation is available.

33. *Blocks* 53—58 comprising 6,150 acres are located in the Banka Sub-division of the Bhagalpur district, and form part of the Katoria C. D. Block. The soil is lateritic, with slopes varying from 1 to 4 per cent. The area receives a rainfall of about 52 inches. No irrigation is available.

34. *Blocks* 59—71. These blocks also form part of the Banka Sub-division, in the Bhagalpur district, and form part of the Bounsi and Belhar Anchal C. D. Blocks. Other details regarding these blocks are the same as for blocks 53—58.

35. *Blocks* 72—101. Blocks 72—83 are situated in the jurisdiction of the Deori, Jhumri Tilaiya, Champaran, Barhi, Jainagar and Chouparan police stations. Blocks 84—94 and 96—101 are located in the Hazaribagh tehsil, and block 95 in the Khak tehsil. The soil is lateritic with depths varying from 3 to 5 feet. These blocks comprise mostly uplands with gentle slopes. The rainfall is about 50 inches. No irrigation is available.

36. To sum up, it may be stated that the wastelands in category I are located in the lateritic belt comprising the districts of Ranchi, Dhanbad, Hazaribagh, Singhbhum, Palamau, Gaya, the Santhal Parganas, and parts of Shahabad, Monghyr and Bhagalpur. The lands are mostly undulating, with uplands and valleys. The rainfall ranges from 40 to 55 inches, most of which is received during the period June to September. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. They are poor in organic matter. The uplands constitute about 60 per cent and the slopy and lowlands 20 per cent each of the entire area. The uplands have a gentle slope, but the slopy lands have slopes of 2 to 8 per cent. The area offered for reclamation is practically devoid of trees and shrubs. No irrigation is available.

37. Land reclamation in these areas is primarily soil and water conservation work. Some of the uplands, which have heavy soil capable of retaining moisture, can be made fit for paddy cultivation by the construction of bench terraces. Other uplands which have *murum* on the surface, are more suited for afforestation and for planting cashewnut and sisal. The slopy or medium lands can be bench-terraced for paddy cultivation. The low lands are generally badly eroded with deep gullies, across which earthen embankments may be constructed to store rain-water for agricultural and other purposes, and for checking erosion on the down-stream side of the gullies. The flat land at the bottom can be converted into paddy fields, or used as percolation tanks.

38. The average cost of reclamation will vary with the nature of the soil and the measures to be adopted for reclamation. Where the land is to be contour-bunded, the cost of soil conservation measures may not exceed Rs. 100 per acre, including Rs. 25 for the supply of seed for green manuring, fertilizers, etc., and Rs. 25 for ploughing up the land before sowing the crop. In the lands where the construction of bench terraces and percolation tanks is required in addition to contour-bunding in the uplands of the catchment, the average cost of these measures will amount to Rs. 325 per acre, in addition to the expenditure on green manuring and

fertilizers, and on ploughing of the land, which latter may come to Rs. 75 per acre. Reclamation operations are at present being undertaken departmentally, as well as through contractors or the agency of gram panchayats. The work is done by manual labour and also with the help of heavy tractors.

39. Of the total area of 57,396 acres in category I offered for reclamation, the expenditure on reclaiming about 60 per cent of the area will be Rs. 50 per acre and the remaining 40 per cent, Rs. 325 per acre. On the basis of these figures, the total cost will amount to Rs. 91.83 lakhs. The average cost of reclamation will come to Rs. 160 per acre. These figures exclude the cost of follow-on cultivation.

40. Before we proceed to deal with the next category of wastelands, we wish to make the following suggestions :—

(*i*) The wastelands in South Bihar and the Chotanagpur plateau are owned by the Government as well as private individuals. So far, there had been little opposition from the private owners of these lands whenever soil conservation measures were required to be undertaken on their holdings as part of a complete watershed. Nevertheless, we are of the view that suitable legislation on the lines of the model Act prepared by the Government of India should be enacted, so that the State Government may have the necessary authority for carrying out soil conservation measures in a catchment, whenever a large majority of the cultivators in the catchment area are willing to have these measures undertaken on their holdings. This legislation should contain provision to the effect that, in case the soil conservation work is not carried out by the beneficiaries in accordance with the technical plans approved by the Government Department, this may be done by the Government, or on its behalf by the Panchayat Samiti or by any other agency deputed by the Government, and the cost recovered from the beneficiaries.

(*ii*) The soil conservation work, now being executed in the State, covers mostly the Tribal areas where the cultivators are practically without any resources. The entire expenditure on reclamation in these areas is treated as subsidy to the cultivator, and is borne by the Central and the State Governments in the ratio of 3 : 1. In the non-Tribal areas also where contour-bunding and other soil conservation measures are being undertaken in private holdings, the expenditure is treated as subsidy. We recommend that, while the existing system may continue in the Tribal areas, the expenditure on reclamation in the non-Tribal areas should be shared as under :—

(*a*) 75 per cent of the expenditure should be advanced as loan t
the cultivator to be recovered in equal annual instalments spr
over a period of 10 to 15 years, and

(*b*) pays a token sum for the reclamation of such lands to i
between the Centre and the State.

(*iii*) We recommend that the land revenue should not be
from the cultivators of reclaimed lands for a period of three
reclamation, since these lands do not give any economic re
initial period.

(*iv*) The wastelands near *bastis* should be assigned r
mation over other lands, but large tracts of wastelands
bastis should also receive equal consideration if the ov

(*a*) constructs a dwelling house on such lan (*b*) pays a token sum for the reclamation of such lands to indicate his earnestness to cultivate these lands.

(*v*) Reclamation of uplands by manual labour is cheaper than with the use of mechanical equipment. Accordingly, manual labour should, as far as possible, be employed for such operations as contour-bunding.

(*vi*) The selected projects on soil conservation should be on a complete watershed basis. The lines on which contour ditches and bunds are to run should be decided in advance, including the alignment of surplus channels (vegetative waterways), masonry structures, etc.

(*vii*) In an area receiving a rainfall of 45 inches or more, there is bound to be some stagnation of water above the bunds if they are aligned on a dead contour. Whilst this condition may be quite useful for a crop like paddy, it may prove harmful to the growth of other crops. This position can be improved either by providing suitable outlets, or by constructing graded bunds leading to a vegetative waterway.

(*viii*) The following field experiments may be laid out in order to study the variations in cost under different methods of bunding :—

(*a*) A small area of 25—50 acres in a "self-defended" catchment should be laid out with bunds of 10 sq. ft. section (consolidated) on a falling contour, the surplus water emptying on to a natural or artificial vegetative waterway. The distance between the bunds should not be more than 200 ft. The material for the bund should be excavated from the upstream side so as to form a trapezoidal channel.

(*b*) Another area of 25—50 acres should be laid out with the above type of bunds, excavation being from borrow pits of rectangular shape. The bunds should be on level with ends open and should discharge into a vegetative waterway.

(*c*) A third catchment of 25—50 acres may be taken up. Trenches of 2 ft. in width and 2 ft. in depth may be dug out along the contours, and the excavated material should be used to form a bund on the downstream side. The interval between the trenches should not be more than 100 ft. These trenches should be on level with ends open. The bunds may be planted with sisal at closer spacing.

41. The above three field plots should be kept under observation for a period of three years, and the best of them from the point of view of cost and effectiveness should be adopted in future work.

Category II

42. In this category, 31 blocks comprising an area of 31,259 acres have been located in the districts of Darbhanga, Saharsa and Purnea, as per details below :—

43. *Blocks* 102—104 are situated between the Kosi Main Canal and the western Kosi embankment in the Darbhanga district. The entire area of these blocks is infested with weeds and grasses like *kans, pater, sarkanda,* etc. The soil is alluvium. The land is flat and fertile, and can produce ood crops of paddy, chillies, etc. The rainfall is 40 to 45 inches. Irriga-

tion can be provided from the Kosi canals, or by the installation of tube-wells. The area is, however, subject to floods during the rainy season, and only one crop can be grown during the year. The cost of clearing and ploughing up the land with tractors will come to about Rs. 100 per acre.

44. *Blocks* 105—121. These blocks comprising an area of 10,500 acres are located in the Saharsa district. They are infested with weeds and grasses. The soil is sandy and barely 3-4 inches in depth. The rainfall is about 55 inches. Sub-soil water is available at a depth of 10—15 feet, and can be tapped for irrigation. Some portions of these blocks are subject to floods during the rainy season. The cost of reclamation is estimated at Rs. 100 per acre.

45. *Blocks* 122—132 fall in the jurisdiction of Islampur, Thakurganj and Pothia police stations, in the Purnea district. The area is infested with bushes and shrubs. The soil in blocks 122—129 is black, but its depth is barely 3-4 inches. In the remaining blocks the soil is sandy. In blocks 130—132 irrigation will be available from the Kosi canals, and in the other blocks tube-wells can be installed for irrigation. The cost of reclamation is estimated at Rs. 50 per acre.

46. The area offered for reclamation in category II in the Purnea and Saharsa districts is 16,459 acres only, although there are extensive belts of barren lands in these two districts. As a result of the shifting of its course by the Kosi, fertile lands in these two districts have been covered with coarse sand, and have thus been rendered unproductive. In course of time silt deposition has taken place over their surface, so that these wastelands have now a thin layer of 6—9 inches of sandy loam or loamy sand on the top with coarse or fine sand underneath. It is estimated that there are 200 sq. miles of such wastelands in the Purnea district alone. The Araria plains which is the worst affected, covers about 100 sq. miles of barren lands. Sand dunes are present all over these belts.

47. Although rainfall in these areas is over 60 inches, crop growing is a hazard. The cultivation of these lands disturbs the thin layer of the top soil which is blown off by strong winds which prevail in these belts. In recent years, however, the Bihar Forest Department has succeeded in establishing experimental plantations of bambco and cashewnut in these wastelands. Whilst the success of cashewnut cultivation is still in doubt, bamboo grows luxuriantly in these lands and has indeed been a phenomenal success.

48. The people living in these areas, however, are averse to the Government policy of afforestation as they believe that these lands will be quite fit for growing agricultural crops when irrigation is available from the Kosi Canals system. The Bihar Agriculture Department is now engaged on evolving a system of cropping suitable for these lands under irrigated conditions. We are of the view that it may be possible to evolve a crop pattern in which forage legumes and erosion-resistant crops like groundnut are included in the rotation. The establishment of bamboo plantations as shelter belts will still be necessary as a protection to the cultivated lands from wind erosion, apart from the economic returns which these plantings would yield from lands not suitable for arable farming. We, therefore, recommend that, before irrigation is available, a detailed soil survey of wastelands should be conducted with a view to delineating these lands on the basis of proper land use.

SECTION C

(Disposal of reclaimed lands for cultivation)

Nature of ownership of wastelands and their disposal for cultivation

49. In Bihar, the wastelands for which information has been furnished by the State Government, are owned by the follownig :—

(*i*) Private individuals, and

(*ii*) Government (*Gairmazrua Khas*).

50. A statement showing the breakdown of wastelands according to their ownership is given in Appendix G. It would be observed that the proportion of wastelands in private ownership in category I to the total area of such lands offered for reclamation is 60 per cent, excluding the areas of which the ownership is not known. In category II the proportion is as high as 87 per cent.

51. As stated earlier, the extent of wastelands in Bihar is over 2 million acres, most of which are found in the lateritic belt of the State. The survey carried out by the State Government in the lateritic belt has revealed that the *gairmazrua* lands are not more than five per cent of the total area under wastelands in this region, since most of the Government lands have been converted into *raiyati* lands by settlement, or brought under unauthorised cultivation. It is, therefore, evident that large areas of Government wastelands are not available for settlement in the Chotanagpur plateau.

52. The problems involved in the disposal of wastelands are discussed below :—

52.1. *Private lands.* The wastelands belonging to private individuals are handed over, after reclamation, to their owners for follow-on cultivation. As the reclaimed lands have, in the past, been brought under cultivation, the State Government do not consider it necessary to set up any colonisation projects for the cultivation of these lands. There are, however, some wastelands which have remained fallow, and these lands mostly belong to the city dwellers and landless labourers. We recommend that where reclaimed lands remain uncultivated for a period exceeding two years, a notice may be served on the owners or tenants of these lands, requiring them to bring the lands under cultivation within a specified period. If they fail to do so, Government may take over the lands and lease them out to other tenants on the payment of a fair rent.

52.2. *Government lands.* As already stated, the extent of Government wastelands is not considerable. Allotments of Government wastelands may be made to the members of the Scheduled Castes and the Scheduled Tribes, in accordance with the existing orders of the Government regarding land settlement (*vide* Appendix H). We would, however, suggest that the unit of allotment to each family in South Bihar and the Chotanagpur plateau should be 10 acres, of which two acres should preferably be low lands suitable for paddy cultivation. We also recommend the setting up of co-operative colonies of the members of the Scheduled Castes and Tribes, and landless labourers in favourable areas to serve as pilot projects. A model settlement scheme is given in Appendix I.

Suggestions for effective utilisation of wastelands

53. We may now make a few suggestions for the effective utilisation of wastelands offered for reclamation. We are of the view that the success in the utilisation of wastelands is achieved only if reclamation is followed by suitable follow-on cultivation operations.

54. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the lateritic belt of South Bihar and the Chotanagpur plateau. The State Government may apply for financial assistance for conducting these surveys to the Central Soil Conservation Board.

55. Every effort should be made to complete procedural formalities for the allotment of wastelands before the work of reclamation is taken up. This enables the allottees to settle down on the reclaimed lands without much delay.

56. The execution of soil conservation projects in the State is at present the responsibility of three separate departments of Government, *viz.*, the Agriculture, Revenue and Welfare Departments; the Soil Conservation Department of the D.V.C., and the Bhoodan Samiti. We also observed that there was little co-ordination between the work of these departments in relation to reclamation projects. The best arrangement would seem to be to entrust the work of soil conservation to one Government department, says, the Agriculture Department, since this department has also the necessary organisation and the specialist staff for advising the cultivators in regard to the agricultural practices to be adopted in the reclaimed lands. In so far as the soil conservation work in the Damodar Valley is concerned, this function is performed by the Corporation under the provisions of the D.V.C. Act. The Corporation is maintaining a well-organised department of soil conservation, who will continue to be responsible for soil conservation work in its area of operation, but we suggest that this work should be closely co-ordinated with the soil conservation work of the Agriculture Department. As regards reclamation of wastelands donated to the Bhoodan Samiti, we suggest that this work should be carried out under the technical guidance of the State Agriculture Department, or in accordance with the plans approved by that Department.

57. For the proper utilisation of reclaimed wastelands, the cultivators will have to be educated in the adoption of suitable soil management practices. This can best be done by organising trials and demonstrations of improved agricultural practices on cultivators' holdings, and by arranging for the supply of agricultural requisites, such as improved implements, seeds, fertilisers, etc. If necessary, the Agriculture Department may be strengthened to provide for special staff for carrying out intensive demonstrations and propaganda in the reclaimed areas for a period of two to three years, before moving it to other areas where reclamation work has been taken up. We attach great importance to these trials and demonstrations as the success of reclamation projects is mainly dependent upon the adoption of suitable soil management practices in the reclaimed lands. The responsibility for extension work may be transferred to the Community Development Organisation after the initial period of demonstration.

58. The wastelands in the lateritic belt are extremely poor in fertility. Green manuring should be extensively practised in these lands, and the State Government should arrange for the supply of seed of green manure

crops free of cost in the first year after reclamation. The planting of *Ipomoea carnea* should be encouraged as the leaves and twigs of this plant are a useful source of green matter for application to the fields.

59. In the lateritic belt where irrigation is not available, percolation tanks or earthen embankments across deep gullies may be constructed to hold water. The construction of these tanks helps in the storage of rain-water for irrigation and for cattle and also checks erosion on the down-stream side of the gullies. Special provision for the excavation of percolation tanks to irrigate the reclaimed lands will have to be made in the reclamation programme of the State.

60. In the uplands which are not suitable for growing crops, cultivators should be encouraged to plant cashewnut, sisal, *sabai* grass, etc.

61. It has been suggested above that the execution of soil and water conservation projects on cultivators' holdings should be the responsibility of the State Directorate of Agriculture. In order to carry out the large programme of soil conservation work in the State, we recommend the strengthening of the soil conservation wing of the Agriculture Department, by the appointment of a full-time Joint Director of Agriculture (Soil Conservation), who may be assisted by Divisional Soil Conservation Officers and the necessary field staff.

62. The general crop patterns for the lands in the two categories are as under :—

62.1. *Category I.* The cropping pattern in the lateritic belt of South Bihar and the Chotanagpur plateau will vary according to the rainfall and the slope of the land. However, generally speaking, on the ridges cashew-nut may be grown. In the highly eroded lands, planting of sisal and *sabai* grass is recommended. In the slopy lands which have sufficient soil depth and which are contour-bunded, crops like kulthi (*Dolichos biflorus*) marua (*Eleusine coracana*), early kodo (*Paspalum scrobiculatum*), groundnut, niger, castor, sweet potatoes, early maize, gora paddy, millets and pulses can be cultivated. The cultivation of fruit crops like mango, litichi, lime, guava, etc. may be encouraged in these lands. In the lowlands, paddy, groundnut and maize may be grown. Some of the blocks which are likely to receive irrigation, may be double-cropped with paddy followed by wheat and pulses in the lower areas, while in the uplands sugarcane and maize can be grown followed by groundnut, potato, etc.

62.2. *Category II.* In the Darbhanga district where the lands are very productive due to the deposition of silt from the Kosi river, a number of crops like paddy, wheat, maize, mung, sugarcane, chillies, vegetables, etc., are grown, and crop yields are satisfactory. In the Saharsa and Purnea districts, however, the wastelands are sandy with a thin top-layer of sandy loam or loamy sand. When these lands are cultivated, the thin layer of the soil is disturbed and blown off by strong winds which prevail in these districts. The position will be different when irrigation from the Kosi Canals system is available. Under the irrigated conditions it may be possible to evolve a crop pattern in which erosion-resistance crops like groundnut are included. Irrigation will help in stabilising these soils, which can be furtheir protected from wind erosion by planting shelter belts of bamboo. The Bihar Forest Department has demonstrated that bamboo makes luxuriant growth in the wastelands in these districts.

63. We may now examine the economic aspects of reclamation in terms of the addition to food production and the expenditure involved.

63.1. In the lateritic zone of South Bihar and the Chotanagpur plateau, sisal, *sabai* grass, and cashewnut can be grown on a plantation scale in those lands which cannot be reclaimed for growing agricultural crops. In the State of West Bengal, where these crops have been grown in the lateritic soils of the Midnapore district, it is estimated that in average yield of 5 maunds of sisal fibre per acre can be obtained for a period of 10 years after the fourth year of planting. Assuming the price of fibre as Rs. 45 per maund, the value of the fibre would be Rs. 225 per acre. The net return from an acre of sisal plantation would be about Rs. 90, after deducting Rs. 135 as the average annual expenditure on labour, maintenance and depreciation. In the case of *sabai* grass, which grows for five years and yields an annual harvest of 15—18 maunds, the value of the produce from an acre of plantation varies from Rs. 70 to Rs. 80. The cultivation of cashewnut gives a return of Rs. 300 per acre from the sixth year after planting, at the rate of 5 maunds of cashew kernals per acre.

63.2. *Dhak* (*Butea frondosa*) and *kusum* (*Schleichera trijunga*) are found growing in the wastelands in the lateritic region. These trees are the hosts of the lac insect. The production of lac is a remunerative secondary occupation of the cultivators in this region, and a family can earn as much as Rs. 500 per acre.

63.3. In those lands where food crops can be cultivated, it is suggested that paddy, *marua, kodo, kulthi,* maize, groundnut and millets may be grown. With a view to ascertaining the yield of some of the principal food crops grown in the lateritic belt, crop-cutting experiments were conducted by the State Government in the uplands and low lands of the reclaimed areas in three different regions. The results of these trials are given below :—

Crop	Average yield (in maunds) obtained in		
	Giridih	Deoghar	Kodarma
Paddy (Irrigated)	8	15	8
Paddy (Un-irrigated)	6	7	6½
Paddy (Broadcast)	6	—	—
Kodo	4	7	
Kulthi	—	15	3½
Maize	—	15	—
Bajra	—	5	
Urd	4	—	2½
Geghra	—	10	—

63.4. It would be seen from the table that the average yield of paddy ranged from 6 maunds to 15 maunds per acre, depending upon whether the crop was rainfed or irrigated. The yields of *kodo, kulthi* and maize were 7, 15 and 15 maunds, respectively. The yields of the crops in the Deoghar region were higher as compared to the other two areas, and this was probably due to the fact that intensive post-reclamation work had been carried out by the Department in this area. We had also had an opportunity of visiting some areas in the lateritic belt of the State, and we were convinced that there were good possibilities of obtaining satisfactory yields of crops in the reclaimed lands if these were properly managed.

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63.5. To summarise, the wastelands in category I which cannot be reclaimed for growing food crops, can be put under sisal, *sabai* grass, cashewnut, *dhak,* and *kusum.* The net return from an acre of non-food crops ranges from Rs. 100 to Rs. 200. In the lands where food crops can be grown, the average yield of the crops, may be taken as 6 maunds per acre. On a conservative estimate, the additional food production over the entire area may be assumed as 6 maunds per acre (if other crops are grown, their equivalents in terms of food crops are taken into account).

63.6. The lands in category II may be divided into two groups as under :—

(*a*) lands located in the Darbhanga district where the soil is productive, and

(*b*) lands in the Saharsa and Purnea districts, where the soil is sandy loam or loamy sand with a depth of 6 to 8 inches.

In the Darbhanga district the yield of paddy is 15 to 20 maunds per acre, and that of jute 10 maunds per acre. The cultivation of crops in the wastelands of the Saharsa and Purnea districts is still a hazard as no irrigation is available from the Kosi Canals system.

63.7. To assess the relative economic benefits of reclamation between the two categories of reclaimable lands, the figures of estimated additional production should be studied in relation to the cost of reclamation and other relevant factors. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the estimated additional food production and the cost of reclamation per maund of additional production.

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TABLE I

Cost of reclamation of land in the two categories and estimated additional production

Category	Description	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional production per acre (maunds)	Total additional production (maunds)	*Value of total additional production (Rs.)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of Additional production (Rs.)
I	Eroded lands	57,396	160	91,83,360	6	3,44,376	27,55,008	48	36·7
II	*Terai* lands	14,800	100	14,80,000	15	2,22,000	17,76,000	120	6·7
	TOTAL ..	72,196	148	1,06,63,360		5,55,376	45,31,008		

*The main food crops of the areas included in categories I and II are paddy, *marua, kodo, kulthi, bajra*, maize, gram and groundnut. A common price of Rs. 8 per maund is assumed.

N.B.—Figures of additional production in regard to category II have been worked out for the areas in the Darbhanga district only as crop growing in the wastelands in the Saharsa and Purnea districts is still a hazard.

65. It would be seen from the table that the cost of reclaiming 72,196 acres in categories I and II (exclusive of the areas of wastelands in the districts of Saharsa and Purnea) comes to about Rs. 1.07 crores, *i.e.,* about Rs. 148 per acre. The estimated additional production from the reclaimed lands is 20,746 tons, valued at Rs. 45.31 lakhs. The average cost of reclamation, therefore, is economic in terms of additional production.

66. As regards the economics of reclamation between the two categories of wastelands, the areas located in the Darbhanga district (category II) seem to be the most profitable in terms of additional production, which is about 15 maunds for an expenditure of about Rs. 100 per acre on land improvement. On the other hand, category I offers the greatest promise for increasing agricultural production since large tracts of eroded lands (estimated at 2 million acres) are reported to be available in the lateritic belt of the State. The average cost of contour-bunding is estimated at Rs. 50 per acre, but where the land is terraced for paddy cultivation and percolation tanks are also constructed, the cost of these measures comes to Rs. 325 per acre. On an average, the cost of reclamation of land in the lateritic belt is Rs. 160 per acre, and the additional food production, on a conservative estimate, is 6 maunds per acre. Since these wastelands are located in the tribal areas, we would recommend that these should also be assigned a high priority as the reclamation of these lands would directly benefit a backward section of the community.

Priorities between the two categories of reclaimable lands

67. We now come to the assignment of priorities between the two categories of reclaimable lands located in the State.

67.1. We recommend that the wastelands located in the Darbhanga district (category II) may be assigned the highest priority in view of the productive nature of the lands.

67.2. The eroded wastelands in South Bihar and the Chotanagpur plateau (category I) should also be assigned an equally high priority because of the following reasons :—

(*a*) Large tracts of eroded lands are available in the State, which, when reclaimed, will materially assist in increasing agricultural production, and

(*b*) Reclamation work in the lateritic belt has been in progress for some years past, and experience has shown that this work can be extended on a large scale with considerable benefit to the community.

67.3. In taking up wastelands for reclamation, preference should be given to those lands which are under the command of an irrigation project, or likely to be commanded by such projects in the near future. In the Monghyr district, some of the wastelands come under the command of the Nagi Dam, and these lands should naturally be given preference over other areas in the district. Similarly, some of the areas which are likely to be benefited by the Lilajan Irrigation Project in the Gaya district should be taken up for reclamation early.

SECTION D

(Summary of general conclusions and recommendations)

1. Of the total area of 4.84 million acres under the head "other uncultivated lands excluding fallows" and "fallows other than current fallows", about 89,000 acres only have been located in the State for reclamation in blocks of the sizes of 250 acres or more. This area is relatively small as only the blocks of wastelands which could be surveyed by the district authorities with the help of the local staff were reported to the Committee, although (according to the estimate of the State Government) over 2 million acres of wastelands in sizeable blocks are available in the lateritic belt of the State.

(*Paragraphs* 16-17)

2. The wastelands found in the State may be broadly divided into the following two categories :—

I—Eroded lands located in the lateritic belt of South Bihar and the Chotanagpur plateau, and

II—*Terai* lands (lands infested with pernicious grasses such as *kans, pater* etc.).

(*Paragraph* 19)

3. The distribution of wastelands in the two categories is as under :—

Category	Area (acres)
I	57,396
II	31,259
TOTAL	88,655

(*Paragraph* 20)

4. The wastelands found in the lateritic belt of South Bihar and the Chotanagpur plateau are mostly undulating, with uplands and valleys. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. They are poor in organic matter. Land reclamation in these areas is primarily soil and water conservation work. The total cost of reclaiming 57,396 acres would amount to Rs. 91.83 lakhs. The average cost of reclamation would be Rs. 160 per acre.

(*Paragraphs* 36, 37, 38 *and* 39).

5. Although there has been little opposition from the private owners of wastelands for undertaking soil conservation measures on their holdings forming part of a catchment, it is necessary to introduce legislation on the lines of the model Act prepared by the Government of India, empowering the State Government to undertake soil conservation measures in the State.

(*Paragraph* 40)

6. The expenditure on reclamation of eroded lands located in the tribal areas may be shared by the Centre and the State Government in the

ratio of 3 : 1. In the non-tribal areas, where contour-bunding and other soil conservation measures are undertaken in private holdings, the expenditure should be shared as under :—

(*a*) 75 per cent of the expenditure should be advanced as loan to the cultivator to be recovered in equal annual instalments spread over a period of 10—15 years, and

(*b*) 25 per cent should be treated as subsidy to be shared equally between the Centre and the State.

(*Paragraph* 40).

7. Land revenue should be collected from the cultivators of the reclaimed lands after a period of three years after reclamation, since these lands do not give any economic return in the initial period.

(*Paragraph* 40)

8. The wastelands near *bastis* should be assigned higher priority for reclamation over other lands, but large tracts of wastelands lying outside the *bastis* should also receive equal consideration if the owners construct dwelling houses on their holdings and pay a token sum for the reclamation of their lands to indicate their earnestness to cultivate them.

(*Paragraph* 40)

9. Manual labour should, as far as possible, be employed for such operations as contour-bunding while undertaking reclamation of uplands.

(*Paragraph* 40)

10. The selected projects on soil conservation should be on a complete watershed basis.

(*Paragraph* 40)

11. Field experiments should be laid out to study the different methods of bunding in the lateritic belt of the State, with a view to determining as to which method should be adopted with special reference to its cost and effectiveness.

(*Paragraph* 40)

12. The wastelands included in category II comprise areas located in the districts of Darbhanga, Saharsa and Purnea. The land in the Darbhanga district is flat and fertile, and can produce good crops of paddy, chillies, etc. Irrigation can be provided from the Kosi canals or by the installation of tube-wells. The area is, however, subject to floods during the rainy season and only one crop can be grown during the year. The cost of clearing and ploughing up the land with tractors is estimated at Rs. 100 per acre.

(*Paragraph* 43)

13. The area offered for reclamation in the Purnea and Saharsa districts is 16,459 acres only, although there are extensive belts of barren lands in these two districts. It is estimated that there are 200 sq. miles of such lands in the Purnea district alone. The lands are covered with coarse sand on account of the shifting of its course by the Kosi, and have a thin layer of 6″—9″ of sandy loam or loamy sand on the surface with coarse or fine sand underneath. Crop growing is a hazard in these areas as the cultivation of the land disturbs the thin layer of the top-soil which is blown off by strong winds which prevail in these betls. When irrigation becomes available from the Kosi Canals system, it may be possible to

evolve a crop pattern in which forage legumes and erosion,resistant crops like groundnut are included in the rotation. The establishment of bamboo plantations as shelter belts will, however, be necessary as a protection to the cultivated lands from wind erosion.

(*Paragraphs* 46 *and* 47)

14. Before irrigation becomes available in the wastelands located in the Saharsa and Purnea districts, a detailed soil survey should be conducted with a view to delineating these lands on the basis of proper land-use.

(*Paragraph* 47)

15. The wastelands for which information has been furnished by the State Government are owned either by private individuals or the Government. The wastelands belonging to private individuals can be handed over, after reclamation, to their respective owners for following-on cultivation. In order to bring the lands belonging to the Government under cultivation, allotments may be made to the members of the Scheduled Castes and the Scheduled Tribes in accordance with the existing orders of the Government regarding land settlement. Co-operative colonies of the members of the Scheduled Castes and the Scheduled Tribes and landless labourers, may also be established in favourable areas to serve as pilot projects.

(*Paragraph* 52)

16. A detailed soil survey for land-use should be carried out in the areas proposed for reclamation, particularly in the lateritic belt of South Bihar and the Chotanagpur plateau, so that the requisite information on the proper utilisation of wastelands is available.

(*Paragraph* 54)

17. Every effort should be made to complete procedural formalities for the allotment of wastelands before the work of reclamation is taken up.

(*Paragraph* 55)

18. The execution of soil conservation projects in agricultural lands should be entrusted to one Government department, say, the Agriculture Department, since this Department has also the necessary organisation and the specialist staff for advising the cultivators in regard to agricultural practices to be adopted in the reclaimed lands.

(*Paragraph* 56)

19. Reclamation of wastelands donated to the Bhoodan Samiti should be carried out under the technical guidance of the State Agriculture Department, or in accordance with the plans approved by that department.

(*Paragraph* 56)

20. Trials and demonstrations of improved agricultural practices should be organised on cultivators' holdings so that they may adopt suitable soil management practices after reclamation. If necessary, the Agriculture Department may be strengthened to provide for special staff for carrying out intensive demonstrations and propaganda in the reclaimed areas for a period of 2-3 years. The responsibility for extension work may be transferred to the Community Development Organisation after the initial period of demonstration.

(*Paragraph* 57)

21. Green manuring should be extensively practised in the reclaimed lands in order to build up their organic matter content and to improve soil

structure. The State Government should arrange for the supply of seed of green manuring crops free of cost for the first year after reclamation.

(*Paragraph* 58)

22. In the lateritic belt where irrigation is not available, percolation tanks or earthen embankments may be constructed across gullies to hold water. The construction of such tanks helps in the storage of rain-water for agricultural and other purposes, and also checks erosion on the downstream side of the gullies.

(*Paragraph* 59)

23. In the uplands which are not suitable for growing crops, cultivators should be encouraged to plant cashewnut, sisal, *sabai* grass, etc.

(*Paragraph* 60)

24. In order to carry out the large programme of soil conservation work in the State, the soil conservation wing of the Agriculture Department should be strengthened by the appointment of a full-time Joint Director of Agriculture (Soil Conservation), who may be assisted by Divisional Soil Conservation Officers and the necessary field staff.

(*Paragraph* 61)

25. The total cost of reclaiming 72,196 acres in categories I and II (exclusive of the areas of wastelands in the districts of Saharsa and Purnea) comes to about Rs. 1.07 crores, *i.e.*, about Rs. 148 per acre. The estimated additional production from the reclaimed lands is 20,746 tons valued at Rs. 45.31 lakhs. The average cost of reclamation is, therefore, economic in terms of additional production.

(*Paragraph* 65)

26. A study of the cost of reclamation of lands in the two categories reveals that the areas located in the Darbhanga district (category II) are the most profitable in terms of additional food production which is about 15 maunds for an expenditure of about Rs. 100 per acre on land improvement. On the other hand, category I offers the greatest promise for increasing agricultural production since large tracts of eroded lands (estimated at 2 million acres) are reported to be available in the lateritic belt of the State. On an average, the cost of reclamation of land in the lateritic belt is Rs. 160 per acre, and the additional production, on a conservative estimate, is 6 maunds per acre.

(*Paragraph* 66)

27. The wastelands located in the Darbhanga district (category II) may be assigned the highest priority in view of the productive nature of these lands. The eroded wastelands in South Bihar and the Chotanagpur plateau (category I) should be assigned an equally high priority because of the availability of large tracts of such lands in the State.

(*Paragraph* 67)

Sd/-
(B. N. Uppal)
Chairman.

Members

Sd/-
1. (F. C. Gera)
Sd/-
2. (J. P. Mital)
Sd/-
3. (M. S. V. Rama Rao)

Co-opted members

Sd/-
T. P. Singh
Development Commissioner, Bihar.

Sd/-
S. C. Mukherjee,
Joint Land Reforms Commissioner.

Sd/-
S. N. Chakravarti,
Deputy Secretary Irrigation Deptt.

Sd/-
H. Prasad,
Deputy Secretary, Agriculture.

Sd/-
A. S. Venu Gopalan
Secretary.

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
Secretary.

No. F.1024/SPL/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, June 11, 1959.

My dear,

You will agree that the importance of reclamation of culturable wastelands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable wastelands in the country has been variously estimated and the figures run into millions of acres. These wastelands are of two categories :

(*a*) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis;* and

(*b*) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallows lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of relaimable lands.

3. The Committee will consist of the following:—

1. Dr. B. N. Uppal, Agricultural Commissioner, Government of India	*Chairman*
2. *Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India	*Member*
3. Shri F. C. Gera, Chairman, Central Tractor Organisation	*Member*
4. Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	*Member*

In addition, the Committee will co-opt in individual States the following officers:—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing wastelands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours sincerely,

(Sd.) K. R. DAMLE

Chief Secretaries,

All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd February 1960, *vide* Memo. No. 12-1/59-GMF (Co), dated the 3rd February, 1960 (copy enclosed).

No. F.12-1/59-GMF(CO).

GOVERNMENT OF INDIA

MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, the 3rd February, 1960.

SUBJECT—*Reclamation of culturable wastelands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F.1024/SPL/59, dated the 11th June, 1959, referred to therein:—

"Shri M. S. V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,
in place of Dr. J. K. Basu since retired."

(Sd.) V. BALASUBRAMANIAN
Under Secretary

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APPENDIX 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee.

1. What is the total area of culturable wasteland in your State?

   (Culturable wasteland is defined as under:—

   All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows?

   (Current fallows are defined as those lands which remain fallow for the current year only.

   Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

Appendix 'A' vide *Item* 6 *of the Questionnaire.*

STATE :

DISTRICT :

Details in respect of Block No. *consisting of* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the colonization operations in the block successfully?
12. If so, what would be the likely cost of acquisition?

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13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted ?
14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.
15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors ? If the former, is adequate labour locally available ?
16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded ? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.
17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block ?
18. What is the type of soil in the block ? (alluviums, black, red or lateritic).
19. Is the land flat or gently sloping or steep ? What is the depth of the soil ?
20. What crops are grown in the area round about the block ?
21. What is the yield per acre of each crop ?
22. What is the nearest marketing centre for these crops ?
23. What is the extent and distribution of rainfall in the area ?
24. Can irrigation facilities be made available for the block ? If so, what kind of facilities ?
25. Whether these irrigation facilities will be perennial or non-perennial ?
26. If no irrigation facilities exist at present, whether any irrigation

projects likely to be taken up in Third Five Year Plan will cover this land ?

27. What is the depth of sub-soil water ? Is water sweet or brackish ?
28. Are anti-malarial operations necessary in the area for successful colonization ?
29. Is any endemic disease prevalent in the area ? If so, do the State Government contemplate any measures to combat this disease ?
30. Is drinking water available in the block ?
31. Are there any drinking water wells in use ?
32. Is the area subject to depredations of wild animals ? If so, what animals ?
33. Is the block likely to attract settlers from distant places in the State or from other States ?
34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block ?
35. Do you think educated unemployed could be successfully settled in the block ?
36. What should be the unit of allotment per settler ?
37. Would you suggest that the settlers should put up their home-steads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi* ?
38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on co-operative basis).
39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX 'C'

DR. B. N. UPPAL,
*Chairman, Wastelands Survey
and Reclamation Committee.*

D.O. No. F. /59-WLS & RC.

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
DEPARTMENT OF AGRICULTURE

'KRISHI BHAVAN'

New Delhi, *January* 2, 1960
Paus 12, 1881

Dear Shri

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in Appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in Appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials

to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,
(Sd.) B. N. UPPAL

All Liaison Officers
in the States and Union Territories.

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APPENDIX D

Statement showing yield (in lbs.) per acre of important crops in Bihar—1957-58

Crop	Rice		Wheat	Maize	Barley	Gram	*Sugar-cane	Jute
	Autumn	Winter						
Patna	277	608	659	792	207	432	3,870	—
Gaya	273	490	592	483	461	385	2,715	—
Shahabad ..	275	624	476	763	460	502	2,955	—
Saran	410	309	631	412	629	413	640	452
Champaran ..	349	394	417	420	408	510	2,644	614
Muzaffarpur ..	388	370	530	489	340	457	2,844	771
Darbhanga ..	395	274	475	647	390	368	2,804	699
Monghyr ..	362	209	367	437	431	460	1,601	587
Bhagalpur ..	316	313	638	435	309	360	1,394	586
Purnea	357	286	350	731	465	403	1,395	522
Santhal Parganas	244	646	446	270	387	435	495	823
Hazaribagh ..	243	375	476	537	290	200	2,715	—
Ranchi	241	400	477	367	287	200	2,419	—
Dhanbad ..	271	587	475	431	347	179	2,425	—
Palamau ..	232	270	476	586	288	198	2,427	—
Singhbhum ..	347	716	476	465	300	200	1,736	—
Saharsa	140	167	285	368	287	277	1,221	685
State	316	429	509	485	437	434	2,681	593

*In terms of gur.

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APPENDIX E

Land utilisation statistics for Bihar for the year 1957-58 (*district-wise*)

District	Total geographical area		Forest	Land not available for cultivation		Other uncultivated land excluding fallow lands			Current fallows	Fallows other than current fallows	Net area sown
	By professional survey	By village papers		Barren and unculturable lands	Land put to non-agricultural use	Culturable waste	Permanent pastures	Misc. tree crops and groves*			
Patna	13,85,037	13,61,920	8,856	27,265	1,98,932	24,997	134		1,13,016	10,561	9,78,159
Gaya	30,50,157	30,37,440	5,41,079	2,39,383	2,48,356	99,569	23,423		3,40,809	79,922	14,64,899
Shahabad ..	28,18,778	28,10,880	6,07,784	69,847	2,53,745	35,939	2,412		2,28,609	24,090	15,88,454
Saran	17,08,032	17,12,640	448	35,824	2,00,112	42,938	9,082		2,46,089	27,197	11,50,950
Champaran ..	22,73,843	22,63,680	1,68,531	74,559	1,94,956	1,06,292	38,667		1,82,231	46,401	14,52,043
Muzaffarpur ..	19,31,456	19,32,800	—	23,852	1,49,361	35,694	5,066		99,370	9,739	16,09,718
Darbhanga ..	21,40,736	21,49,760	—	40,948	2,74,733	96,489	13,852		3,04,013	27,057	13,92,668
Monghyr ..	25,43,949	25,16,480	1,62,341	1,92,185	3,27,964	1,23,377	14,938		4,15,929	83,777	11,95,969
Bhagalpur ..	13,94,650	13,83,615	1,60,236	74,304	1,72,742	85,710	13,191		1,90,489	55,191	6,31,752
Saharsa	13,36,410	13,24,865	606	87,273	1,65,816	1,41,533	10,858		2,78,409	63,194	5,77,176
Purnea	27,24,518	26,34,240	34,306	68,351	2,75,006	96,098	68,067		6,04,410	1,28,840	13,59,162
Santhal Parganas	35,00,550	35,12,960	8,21,681	1,24,688	2,85,862	3,55,184	1,28,615		3,91,244	2,42,258	11,63,428
Hazaribagh ..	44,86,419	44,71,040	22,19,540	2,23,501	1,71,738	2,83,646	1,10,460		3,96,975	3,03,359	7,61,821
Ranchi	45,65,152	45,03,357	12,02,929	2,38,227	1,84,982	2,81,146	21,430		4,30,296	4,55,110	16,89,237
Palamau ..	31,55,494	31,44,960	20,07,464	1,57,494	69,307	1,35,803	21,252		4,09,982	1,61,690	1,81,968
Dhanbad ..	7,13,152	7,10,119	1,03,032	59,301	1,09,126	97,345	3,901		75,726	63,228	1,98,460
Singhbhum ..	32,78,349	33,52,338	16,34,819	1,84,349	2,26,338	2,38,139	60,230		2,33,435	2,25,154	5,49,874
State Total ..	43,006,682	4,28,23,094	96,73,652	19,21,351	35,09,076	22,79,899	5,45,578		49,41,032	20,06,768	1,79,45,738

*Not available.

APPENDIX F

Details of Blocks in Categories I and II offered for reclamation

District	Name of Block	Block No.	Nearest Rly. Station	Accessible by all/fair weather road	Whether in-cluded in C.D. Block	Total area (acres)	Extent of rainfall (inches)	Depth and nature of sub-soil water (feet)	Endemic diseases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				Category I					
Ranchi ..	Rato, Tendor, Terala & Jhiri.	1	Ranchi	All weather	Yes	1,100	45—50	35, sweet	No
	Hotwar	2	Ranchi	Fair weather	Yes	334	45—50	35, sweet	No
	Ratu, Tengar	3	Ranchi	Fair weather	Yes	700	45—50	35, sweet	No
	Dumardaga and Kathuaga	4	Ranchi	All weather	Yes	311	40—50	35, sweet	No
Palamau ..	Kedal	5	Daltonganj	Fair weather	Yes	265	Not known	Sweet	Not known
	Untari	6	Untari Road	Fair weather	Yes	250	Not known	Sweet	Not known
	Khutaharia	7	Untari	Fair weather	No	250	Not known	Sweet	Not known
	Ierua	8	Untari	Fair weather	No	260	Not known	Sweet	Not known
	Ratnagara	9	Untari Road	Fair weather	No	250	50	Sweet	Not known
	Rajhara I	10	Rajhara	Fair weather	Yes	260	50	Not known	Not known
	Rajhara II	11	Rajhara	Fair weather	Yes	260	50	Not known	Not known
	Khokhama	12	Rajhara	Fair weather	Yes	275	50	Not known	Not known
Singhbhum ..	Saparum	13	Tirudih	No road	No	8,000	46—60	Not known	No
	Saparum	14	Tirudih	No road	No	380	46—60	Not known	No
Dhanbad ..	Tetulia	15	Barakar	Fair weather	Yes	1,226	50	25—30, sweet	No
	Deoli, Miro, Daldali, Gahera and Belatanr.	16	Dhanbad	All weather	Yes	1,170	50	25—30, sweet	No
	Vidaypur	17	Dhanbad	All weather	Yes	264	—	30	No
	Dibawani, Tiwadah Amlalarh	18	Govindpur	All weather	Yes	273	—	30	No
	Barapichari	19	Dhanbad	All weather	Yes	323	—	30	No
Santhal Parganas	Palajori	20	Jamtara	All weather	Yes	1,168	45—50	25—30	Yes
	Jhumar Bandh, Sanpair Bishanpur	21	Deoghar	Fair weather	No	1,000	48	25—30	No
	Raniganj and Dulati	22	Jamtara	All weather	Yes	1,330	40—45	30, sweet	Yes
	Jamtara	23	Jamtara	All weather	Yes	1,256	42—45	30, sweet	Yes

APPENDIX F (*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Chauparia	24	Jamtara	All weather	Yes	1,087	40—45	30, sweet	Yes
	Haidhara	25	Jamtara	Fair weather	Yes	1,077	40—45	30, sweet	Yes
	Dhanbad	26	Jamtara	Fair weather	Yes	1,230	40—45	30, sweet	Yes
	Bhurtabaudh	27	Jamtara	No	Yes	250	40—45	30—36, sweet	Yes
	Sripore	28	Jamtara	No	Yes	250	40—45	30—36, sweet	Yes
	Pagla	29	Mahijam	No	Yes	250	20—45	40—45, sweet	Yes
	Khurion	30	Mahijam	No	Yes	250	40—45	20—24, sweet	Yes
	Khara	31	Mahijam	No	Yes	250	40—45	20—24, sweet	Yes
	Kusurulala	32	Mahijam	No	Yes	250	40—45	30—35, sweet	Yes
	Bauheria	33	Mahijam	No	Yes	250	40—45	30—35, sweet	Yes
	Kharubunagar	34	Mahijam	No	Yes	250	40—45	30—35, sweet	Yes
	Maralo I	35	Mahijam	No	Yes	250	40—45	30—40, sweet	Yes
	Maralo II	36	Mahijam	No	Yes	250	40—45	30—35, sweet	Yes
	Deopur	37	Jasidih	Fair weather	No	400	50	4, sweet	Yes
	Lakra, Gadi Jamua	38	Jaridih	Fair weather	No	300	48	3, sweet	Yes
	Kotia, Baigia and Sankari.	39	Jaridih	All weather	No	300	50	3, sweet	Yes
	Chitrapokha, Jagatpur Dudhia.	40	Deoghar	Pucca Road	No	250	45	3-4, sweet	Yes
	Chendin, Jhilua, Ukharia and Barakola.	41	Jasidih	All weather	No	300	48	4, sweet	Yes
	Bela and Lakra	42	Deogaher	All weather	No	250	45—50	3-4, sweet	Yes
	Punhari, Naukhili and Digaria.	43	Jesidih	All weather	No	250	48	3½, sweet	Yes
	Bibabi, Surya & Ssuraiya	44	Deogaher	All weather	No	250	45—50	3-4, sweet	Yes
Gaya	Angra, Kusa Bija, Lachanti and Bhadwar.	45	Gaya	Fair weather	Yes	995	44	25—30, sweet	No
	Gopalpur, Udhan, Bijha, Ghujji and Dhab.	46	Gaya	Fair weather	Yes	1,300	44	25—30, sweet	No
Monghyr ..	Dhamna	47	Jhajha	All weather	No	1,000	48	30—40, sweet	No
	Jagdih	48	Simultala	All weather	Yes	1,000	48	20—25, sweet	No
	Lalpur and Raichur	49	Lakahan	Fair weather	Yes	1,000	48	20—25, sweet	No
	Block of 9 villages, 4 miles Jhajha.	50	Jhajha	All weather	Yes	1,375	40—50	30, sweet	No
	Block of 5 villages, 8 miles from Jhajha.	51	Jhajha	Fair weather	Yes	1,248	40—50	30, sweet	No
	Mohanpur	52	Jhajha	Fair weather	Yes	1,200	40—50	30, sweet	No

APPENDIX F *(contd.)*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Bhagalpur ..	Jamdaha	53	Bounsi	Fair weather	Yes	1,100	52	30—35	No
	Debasi	54	Deoghar	Fair weather	Yes	1,351	52	30, sweet	No
	Bhellua and Janakpur	55	Deoghar	Fair weather	Yes	1,397	52	30, sweet	No
	Mathan	56	Barahat	Fair weather	Yes	1,000	52	25—30, sweet	No
	Jamadah	57	Bounsi	Fair weather	Yes	1,000	45—50	35, sweet	No
	Jhagarhi, Bhansadhih	58	Deogarh	Fair weather	Yes	300	45—50	3—4, sweet	Yes
	Chandepatti, Methiharah and Kamdih.	59	Deogarh	Fair weather	Yes	300	50	3—4, sweet	Yes
	Babhangma and Degriphari.	60	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Singora and Ambera	61	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Sukhiahriat	62	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Saroa	63	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Tellwaritt and Kgorada	64	Sultanganj	Fair weather	Yes	250	32	Sweet	No
	Chilkara	65	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Fagha	66	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Belhar	67	Sultanganj	Fair weather	Yes	250	32	Sweet	No
	Sikandarpur	68	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Bagdumma, Lora, etc.	69	Mandirhill	Fair weather	Yes	250	32	Sweet	No
	Gokula	70	Baunsi	Fair weather	Yes	250	32	Sweet	No
	Banka Anchal	71	Baunsi	Fair weather	Yes	250	32	Sweet	No
Hazaribagh ..	Chatro	72	Maheshmunda	Fair weather	No	1,445	50	25—35, sweet	No
	Dhabo, Thambh, Gajna and Choski.	73	Kodarma	All weather	Yes	1,000	50	10—15, sweet	No
	Aragare, Sardardih and Nawadih.	74	Kodarma	All weather	No	500	40—45	40—45, sweet	No
	Jolakharma, Pegdanda and Pindare.	75	Kodarma	All weather	No	300	40—45	40—50, sweet	No
	Gaiura	76	Kodarma	Fair weather	No	300	40—45	45, sweet	No
	Majhladih and Chandwara.	77	Kodarma	All weather	Yes	300	45—50	45, sweet	No
	Dumardiha, Kanana and Dhamana.	78	Kodarma	All weather	Yes	300	45—50	10—15, sweet	No
	Konara, Basaria and Hanla.	79	Kodarma	All weather	Yes	600	40—45	15—20, sweet	No

APPENDIX F (*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Jardih, Kawal, Solon, Kolanga, Shivgar, Dhamana, Garitha, Arogoro, Dhanwan.	80	Kodarma	Fair weather	Yes	700	45—50	15—20, sweet	No
	Lochhodih, Gojo, Barhidih.	81	Kodarma	Fair weather	Yes	250	45—50	15—20, sweet	No
	Chunhi, Bajiadih, and Bansot.	82	Kodarma	Fair weather	Yes	300	45	15—20, sweet	No
	Bhondo, Bana, Pipprahi, Patto, Nawadih, Jongdih, Madhadih and Purnadih.	83	Kodarma	No road	Yes	1,000	40—50	20—25, sweet	No
	Sultanpur and Mayatu	84	Ramgarh	All weather	Yes	250	46	15, sweet	No
	Sadanpar	85	Ramgarh	All weather	Yes	300	46	15, sweet	No
	Chippi, Pakrar	86	Ramgarh	All weather	Yes	300	46	18, sweet	No
	Katkamdag	87	Ramgarh	All weather	Yes	250	56	21, sweet	Yes
	Churehu	88	Kodarma	All weather	Yes	250	46	15, sweet	Yes
	Pundi	89	Kodarma	All weather	Yes	250	46	15, sweet	Yes
	Khofan and Nawadih	90	Ranchi Road	All weather	No	250	46	15, sweet	Yes
	Thongura & Pundri	91	Ranchi Road	Fair weather	No	300	46	15, sweet	No
	Barari and Sekha	92	Kodarma	Fair weather	No	252	46	20, sweet	Yes
	Amnari	93	Kodarma	Fair weather	No	258	46	25, sweet	Yes
	Kesura, Karbe, Khund, Tuti.	94	Kodarma	Fair weather	No	268	46	25, sweet	Yes
	Karimati, Tepsa	95	Kodarma	All weather	No	253	46	25, sweet	Yes
	Nagwa and Rautra	96	Kodarma	Fair weather	No	275	46	25, sweet	Yes
	Korra, Jarba, Sihani	97	Kodarma	Fair weather	No	260	46	25, sweet	Yes
	Oriya, Birbi and Sakkera	98	Saiya	Fair weather	No	255	46	25, sweet	Yes
	Kani Makua and Bela Marua.	99	Saiya	Fair weather	No	252	46	25, sweet	Yes
	Meru	100	Hazaribagh Rd.	Fair weather	No	260	46	25, sweet	Yes
	Nanahappa and Rehda	101	Hazaribagh Rd.	Fair weather	No	252	46	25, sweet	Yes
				Category II					
Darbhanga ..	Block situated in between the Kosi river main cannal and western Kosi embankment.	102	Ghaghar	No road	No	7,120	40—45	35, sweet	No

APPENDIX F (concld.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dilhai, Taralaki, Bappati, Mandanpur, Amadih and Chhatan-nadi.	103	Laheria Sarai	All weather	Yes	1,500	40—45	35, sweet	No
	Block situated in between Kosi river Channel and western embankment village Tingri etc.	104	Ghogardiha	No road	No	6,180	40—45	35, sweet	No
Saharsa ..	Thalhagarhia	105	Madhipura	Fair weather	Yes	1,000	20—25	10—15, sweet	No
	Kukurdhari	106	Madhipura	Fair weather	Yes	1,000	20—25	10—15, sweet	No
	Tengri	107	Bathnaha	Fair weather	Yes	1,000	20—25	10—15, sweet	No
	Madhuvani	108	Bathnaha	Fair weather	Yes	1,000	20—25	10—15, sweet	No
	Raghunathpur	109	Bathnaha	Fair weather	Yes	1,500	20—25	10—15, sweet	No
	Baishai	110	Bathnaha	Fair weather	Yes	1,500	20—25	10—15, sweet	No
	Kamapattai	111	Madhipura	Fair weather	Yes	1,000	20—25	10—15, sweet	No
	Parbaha and Dinbandhi	112	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Kamalpur and Shreepur	113	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Raniganj	114	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Khoutaha and Lalpur	115	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Balua	116	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Govindpur and Sreepur	117	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Barantpur	118	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Sitapur	119	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Bhimnagar	120	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
	Kushahar	121	Bathnaha	Fair weather	Yes	250	20—25	10—15, sweet	No
Purnea ..	Koltha, Maria and Mahasil.	122	Islampur	All weather	Yes	1,546	—	8, brackish	No
	Bagrami	123	Pothia	All weather	Yes	1,145	—	8, brackish	No
	Ramnagar	124	Kritynanadnagar	All weather	Yes	1,148	—	8, brackish	No
	Patharia	125	Thakurgunj	Fair weather	No	250	100—110	12, sweet	Yes
	Churh	126	Pipri	Fair weather	No	371	100—110	12, sweet	Yes
	Patharia I	127	Thakurgunj	Fair weather	No	250	100—110	12, sweet	Yes
	Dhubonchi	128	Yaiyahpur	Fair weather	Yes	250	—	12, sweet	Yes
	Pokkaria	129	Pothia	Fair weather	Yes	250	60	12, sweet	Yes
	Majhua (near Bausi)	130	Araria	No road	Yes	250	150	20, sweet	Yes
	Majhua (near Lulpur)	131	Sarsi	No road	Yes	250	150	20, sweet	No
	Majhua (near Barhara)	132	Sarsi	Fair weather	Yes	250	150	20, sweet	No

APPENDIX G

Statement showing the break-down of wastelands according to ownership

District	Area located (acres)	Area (in acres) belonging to		Area (in acres) of which ownership details not available
		Private individuals	Government	
	Category I			
Ranchi	2,445	520	1,225	700
Palamau	2,070	421	1,129	520
Singhbhum	6,380	—	380	6,000
Dhanbad	3,256	482	2,774	—
Santhal Parganas	12,948	8,777	4,171	—
Gaya	2,295	1,027	1,268	—
Monghyr	6,823	4,123	700	2,000
Bhagalpur	9,448	4,776	4,672	—
Hazaribagh	11,731	6,556	2,025	3,150
Total (Category I) ..	57,396	26,682	18,344	12,370
	Category II			
Darbhanga	14,800	14,800	—	—
Saharsa	10,500	8,950	1,550	—
Purnea	5,959	3,384	2,575	—
Total (Category II) ..	31,259	27,134	4,125	—
GRAND TOTAL ..	88,655	53,816	22,469	12,370

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APPENDIX H

Existing orders of the Government regarding settlement of lands in Khas Mahal and in vested estates and tenures with members of the Scheduled Castes, the Scheduled Tribes and Backward Classes.

I am directed to refer to this Department's circular letter No. 3,848 R, dated the 15th May, 1951 in which the District Officers were asked to settle suitable blocks of Khas Mahal lands with Harijans for homestead and agricultural purposes and to furnish monthly reports to Government showing progress made by them in the direction.

2. The monthly reports received from the District Officers have been irregular and uninformative. They indicate that the efforts to settle land with Harijans have been desultory and spasmodic, and that Government's desire that every Harijan family should be provided with .05 acre of homestead land for its home and 5 acres of agricultural land will not be achieved by this procedure. However, they would like to be fully informed of the work that has been done so far and I am directed to request that you should send to Government by the 15th October at the latest a comprehensive review in the proforma enclosed (Appendix I) of the progress made since the issue of the above mentioned circular letter until the 31st August, 1953.

3. I am further directed to say that with effect from the receipt of this letter the following revised procedure should be adopted in the matter of settlement of agricultural homestead land with the weaker sections of the people and in particular of the Scheduled Castes and the Scheduled Tribes of which a list is given in Appendix II :—

(*i*) A statement village by village should be prepared by the Khas Mahal Tahsildars and Karamcharis in all villages where Government have lands, giving a list of families in that village belonging to any of the classes mentioned in Appendix II, showing the strength of the families, the lands which they already possess and indicating whether they have their own homestead lands or not. The National Register which was prepared in the last census would be of considerable help in making and checking up this statement, some Gazetted Officers should also be made responsible to ensure quick progress in preparing these statements, and to verify their accuracy.

(*ii*) Another statement should be prepared of all (1) vacant lands, (2) culturable waste lands and (3) lands reformed by alluvion lying in these villages.

(*iii*) The statement should be ready by the end of the second month of each quarter, that is to say by the 30th November, 28th February, 31st May and 31st August in each year. Early in the third month of each quarter the allotment of available lands in the village should be made amongst the indigent families mentioned in the statement after a study of the economic circumstances and the comparative needs of the families.

(*iv*) At the end of each quarter a report should be submitted to Government, giving a list of the families with whom settlements have been made and the areas settled with them. This will be merely a compilation of the statement referred to in (*i*) with the addition of a column to show the areas of agricultural or homestead lands settled with family. As a footnote the total area that was available for settlement and was settled should be given in the quarterly report together with information about any loans advanced for the purposes of reclaiming waste lands to the families which also may be supplied by adding a column. A proforma for the quarterly statement will be forwarded separately.

(*v*) The village-wise statements of the families should be kept up-to-date by re-examination every quarter so as to take into account new arrivals and to remove from the list families who may have left the village. Quarterly statement of available land should also be prepared afresh for every quarter.

(*vi*) With the progress of Zamindari abolition more and more villages will vest in Government, and there should be no delay in adopting the same procedure in these vested villages. It should be laid down that along with the compilation of the registers of the purposes of Zamindari management there should also be prepared by each Karamchari these village-wise lists.

4. I am directed to convey the following additional instructions in order to make the Scheme effective :—

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(*a*) In cases where waste land is settled with a family, it will be necessary to help the family by granting a land improvement loan and in lateritic areas the subsidy should also be given as soon as reclamation is made.

(*b*) In making the settlement the local laws and customs must be respected. For example, section 21A of the Bihar Tenancy Act requires that bakast lands of the landlord should be first offered to a resident of the village and only if he is not willing to take it, it can be given to a resident of an adjoining village. The Record-of-Rights place similar restrictions in Chotanagpur, where also in some areas the village Headman has the duty of making the settlements. In the Santhal Parganas the resident Jamabandi raiyat has to be shown preferences. As regards Alluviated land, because of section 52A(2) of the Bihar Tenancy Act, if such land had been previous to the dilluvion held by a raiyat, that raiyat will have the right to immediate possession on its reformation. Government feel that the numbers of indigent and even landless families of the Classes mentioned in Appendix II are also great and the extent of available land so little that these restrictions will not result in any land lying uncultivated and that except in the case of alluvion of raiyati land it will be possible for the authorities to find tenants from the classes mentioned in Appendix II for all available land in the village. However, any problems which might arise in this connection should be reported in your quarterly reports.

5. Pending the preparation of the lists and the statement in the quarter ending 31st December, 1953, any settlement of Government land which may be made should be only with families of the classes mentioned in Appendix II.

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APPENDIX I

Model pilot scheme for settlement of the Scheduled Castes and Tribes, and landless labourers on a co-operative basis in the lateritic areas of South Bihar and the Chotanagpur Plateau.

Large areas of eroded lands are lying uncultivated in the lateritic areas of South Bihar and the Chotanagpur plateau. A large proportion of these wastelands belongs to private individuals and only about 5 per cent belongs to the Government. The lands are undulating with uplands and valleys. The rainfall ranges from 45 to 55 inches. The soils are generally red and lateritic, varying in texture from sandy loam to loam, but the predominant type is sandy loam with *murum* on the surface. Contour-bunding, terracing, gully plugging, etc., are the main types of reclamation work to be carried out in these areas. The average cost of reclamation is Rs. 160 per acre.

It is proposed to settle on the Government lands the members of the Scheduled Castes and Tribes, and landless labourers on a co-operative basis. The scheme given below indicates in broad outlines the different steps to be taken for establishing colonies of settlers co-operatively. It is not intended to present a rigid scheme since the flexibility of details to suit local conditions is the *sine qua non* of the success of settlement projects.

The co-operative method of organisation can be applied in settlement work in the following manner :—

(*i*) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members, and

(*ii*) Land may be owned individually but jointly-operated (that is, co-operative joint farming).

In organising the societies, the liability and mutual knowledge and confidence which strengthen the co-operative character, should receive due weight. The broad outlines of each of these patterns are indicated below.

Pattern I : Individual farming with the help of a service co-operative

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It may be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the society. The co-operative caters to the needs of the members, particularly those relating to credit for agricultural production, and the supply of agricultural requisites such as fertilizers, improved seeds, insecticides, etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land. The unit of land to be allotted to each settler's family may consist of two acres of lowlands suitable for paddy cultivation and 8 acres of uplands.

The allottees will have the right to alienate the lands after they have paid back all the advances made to them by the Government. The land to be granted to each settler should be on impartible tenure. Land revenue should be collected from the settlers after a period of 3 years after reclamation. It should be obligatory on the part of the allottee to cultivate the lands himself or with the help of his family members.

Method of working. Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 20 per member. This amount will be repayable in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the member concerned as and when needed. The society, if desired by the members, may also provide domestic requirements against their deposits.

One agricultural officer will supervise the work of a group of five societies. He will assist each society in drawing up a production plan, and all the agricultural operations should be carried out by the members in accordance with the programme. The society will supply fertilizers, improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

Social amenities :

(*i*) *Homestead.* About 1/20th of an acre of land may be allotted as a homestead plot. The value of the plot is negligible.

(*ii*) *House building.* A sum of Rs. 1,000 may be advanced to each family towards the cost of building a house.

(*iii*) *Provision of drinking water.* The cost on this account per family is estimated at Rs. 20.

(*iv*) *School*-cum-*panchayat ghar.* The cost per family on this account will be Rs. 20.

(*v*) *Dispensdry.* Provision for a dispensary may be made for each colony. The cost of establishing a dispensary and running it for a period of about 3 years will be Rs. 160 per family.

Reclamation charges. The average cost of reclaiming eroded lands in the lateritic belt of the State is estimated at 160 per acre. As the unit of allotment per family is 10 acres, the cost of reclamation per family will be Rs. 1,600.

Provision for bullocks and implements. Provision of Rs. 500 per settler may be made for a pair of bullocks and implements to enable the settler to undertake follow-on cultivation in the lands allotted to him.

Maintenance expenses. During the initial period when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. Provision for maintenance charges may be made at the rate of Rs. 500 per family.

Administrative set-up. A sum of Rs. 50 (one Manager at Rs. 100 p.m. *plus* D.A., and one-fifth the pay of Agricultural Officer at Rs. 200 p.m. *plus* D.A.; approximately Rs. 50 per family) will be spent per family towards the administrative set-up for the execution of the settlement scheme.

To sum up, the details of expenditure per family on the various items will be as under :—

Value of land	—
Social amenities	1,200
Reclamation charges	1,600
Provision of bullocks and implements	500
Maintenance expenses	500
Administrative set-up	50
TOTAL	3,850

N.B.—Additional provision will be necessary if roads are to be constructed in the colony areas, or irrigation is to be provided.

Pattern of assistance. Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as under :—

	Loan Rs.	Grant Rs.
I. Individual Members		
(*a*) Share capital	20	—
(*b*) Homestead plot and house	1,000	—
TOTAL	1,020	—
II. Through Co-operative Society		
(*a*) Drinking water supply	—	20
(*b*) School-*cum*-panchayat ghar	—	20
(*c*) Dispensary	—	160
(*d*) Reclamation charges	—	1,600*
(*e*) Provision for bullocks and implements	500	—
(*f*) Maintenance expenses	—	500
(*g*) Administrative set-up	—	50
TOTAL	500	2,350

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The loan on account of the reclamation charges should be recovered over a period of 10 to 15 years in equal annual instalments.

The loan for purchase of bullocks and implements should be recovered from the third year in five annual instalments with the rate of interest as for *taccavi* loans.

The loan for house building should be recovered from the fifth year in fifteen annual instalments with the rate of interest as for *taccavi* loans. No interest should be charged in the first four years.

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*Reclamation expenditure may be treated as grant in the Tribal areas, while in the non-Tribal areas, 75 per cent of the expenditure should be treated as loan to the settlers, and the balance as grant.

The occupancy price of land which should be equal to three times the assessment should be paid from the sixth year in five annual instalments.

Part II : Individually owned but jointly operated

The cooperative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land

The scale of allotment of lands to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

Method of working

The society will formulate a production plan through its elected Managing Committee. The Committee may formulate the day-to-day working plan for the members, either by forming some special groups or on an *ad hoc* basis. The means of cultivation, *i.e.* seeds, fertilisers, implements, bullocks, etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidies received from the Government towards the wages of labour, maintenance charges, etc., would be availed of for this purpose. The crop would be jointly harvested, and the income would be disbursed among the members after deducting the expenditure incurred by the society.

The Agricultural Officer attached to a group of five societies will provide the necessary technical guidance with regard to the formulation of the production programme, rotation of crops, use of fertilisers, choice of improved seeds etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the Society would keep the necessary accounts etc.

The social amenities, reclamation charges follow-on cultivation charges, maintenance expenditure, administrative set up for the organisation of scheme will be the same as in Pattern I.

This pattern will also facilitate the undertaking of the follow-on cultivation.

Pattern of assistance

All the assistance, except loans for homesteads and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

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REPORT
ON
LOCATION AND UTILISATION
OF
WASTELANDS IN INDIA

PART III—BIHAR

WASTELANDS SURVEY AND RECLAMATION COMMITTEE
(MINISTRY OF FOOD AND AGRICULTURE)
GOVERNMENT OF INDIA
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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories :—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(*b*) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June, 1959, (Appendix A) with the following terms of reference :—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz*., Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia*, will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands"

and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under :—

(*i*) forests,
(*ii*) barren and unculturable lands,
(*iii*) land put to non-agricultural uses,
(*iv*) permanent pastures and meadows,
(*v*) areas under miscellaneous trees and crops,
(*vi*) culturable waste,
(*vii*) current fallows,
(*viii*) fallows other than current fallows, and
(*ix*) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows"

may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the different State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

PART III

Bihar

Preface

The report deals with the availability and location of wastelands in large-sized blocks in Bihar and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands in the State, we undertook tours of certain representative areas. It was, however, not possible to visit all the areas offered for reclamation, nor was this considered necessary.

3. During the first visit between the 28th and 30th September, 1959, the Committee visited certain areas in the Monghyr, the Santhal Parganas and the Bhagalpur districts where reclamation work had been carried out by the State Government. A few settlement schemes undertaken by the State Government were also visited. A preliminary discussion with the Liaison Officer of the State was also held during this visit. On the second visit of the Committee from the 26th November to 1st December, 1959, we visited the wastelands in the Hazaribagh, Dhanbad and Ranchi districts, and saw the soil conservation and afforestation works carried out by the State Agriculture, Revenue and Forest Departments, as also by the Damodar Valley Corporation. During the third visit on the 9th and 10th April, 1960, the Committee visited blocks of wastelands in the Purnea and Saharsa districts and had discussions with the local officers. On the 12th April, 1960, the Committee had discussions with the officials of the State Government at Patna. The draft report of the Committee relating to the State was discussed on the 23rd November, 1960, and finalised.

4. We wish to thank the officials of the State Government who gave us the benefit of their views. We wish to express our gratitude to the Liaison Officer, Shri S. C. Mukherjee, Joint Land Reforms Commissioner, for obtaining the necessary data required by the Committee and for arranging the tours. We are also thankful to Dr. P. Sen, Director of Soil Conservation, Damodar Valley Corporation; Shri H. Prasad, Agricultural and Engineering Adviser, Wasteland Reclamation, Revenue Department; and Shri A. K. Mukherjee, Deputy Director, Wasteland Reclamation, for helping the Committee in collecting certain data and in arranging the tours.

5. We are highly indebted to Dr. S. P. Ray Choudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute for furnishing the data on the soils of the State, and for allowing us to make use of facilities of the cartographic laboratory at the Institute in printing the maps included in the report.

PART III

Bihar

SECTION A

(General aspects)

General aspects

The State of Mysore consists of 19 districts, *viz.*, Bangalore, Kolar, Tumkur, Mysore, Mandya, Hassan, Shimoga, Chikmagalur, Chitradurga, Bellary, Bidar, Raichur, Gulbarga, Bijapur, Belgaum, Dharwar, North Kanara, South Kanara and Coorg. The geographical area of the State is 74,861 sq. miles.

Population

2. The population of Mysore, according to the 1951 census, is 1,94,01,193, which gives an average density of 259 persons per square mile as compared to 287 persons for the country as a whole. The State stands eighth in the country both in respect of the area and population.

3. Based on the physical features, the State may be broadly divided into the following three regions :—

(*i*) Coastal region,

(*ii*) *Malnad* or ghat region, and

(*iii*) *Maidan* or eastern plains region.

4. The coastal region is a narrow strip on the west coast, about 200 miles long and varying in width from 8 to 20 miles in the north and 30 to 40 miles in the south. A number of streams and rivers flow from the Ghats to the sea across this region, where they deposit on the land the fertile silt brought in flood waters from the mountains.

5. The *malnad* is the hilly region of the western Ghats, and has an elevation of about 5,000 ft. The land is covered with forests. There are numerous plantations of coffee, arecanut, pepper, cardamom and plantain. The region is thinly populated.

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6. The *maidan* is the eastern rolling plateau of elevations varying from 1,000 ft. to 3,000 ft. It is drained by several rivers, the important being the Krishna, the Tungabhadra and the Cauvery.

Climate

7. The State enjoys a pleasant climate. There are three seasons. The monsoon lasts from June to November, the cold season from mid-December to the end of February, and the summer from March to May. The rainfall ranges from 300 inches in the Ghats to 18 inches in the plains. The zone of heavy rainfall extends from Coorg to North Kanara over a distance of 35 to 50 miles along the Western Ghats, and the precipitation in this belt is over 60 inches. The rainfall is less than 25 inches in the Kolar, Chitradurga, Bellary, Raichur and Bijapur districts, and the eastern parts of Shimoga and Hassan. Over the rest of the State the rainfall is between 25 and 40 inches.

7.1. In the coastal region, the temperature is almost uniform throughout the year; the maximum temperature seldom rises above 90°F., and the minimum rarely falls below 65° F. In the *malnad* the summer is cool and the cold season quite bracing. In the eastern plateau the cold season is pleasant, and in the summer the temperature seldom rises above 100° F. The summer temperature goes above 100° F. in the eastern parts of the plateau, which are farther away from the hilly region.

Soils

8. The main soil groups in the State are coastal alluvium, lateritic soils, red soils and black soils (*vide* Map I). In some areas, black and red soils are found as mixed soils based on colour and other features. The characteristics of these soils are given below.

8.1. *Coastal alluvium.* The area under coastal alluvium is limited. These soils are sandy with a low content of clay and organic matter. The estuaries of the streams and rivers flowing across the coastal area are flat and sometimes salt-affected. The soils are generally poor in nutrients and organic matter, and cultivators apply liberal quantities of green leaf and ash to rich fields. Along the coast *Casuarina* and cocoanut are grown. In the dry lands cocoanut, arecanut and cashewnut are cultivated.

8.2. *Lateritic soils* are found in the areas to the east of the coastal alluvium. The coastal laterites are found near the coast and extend to the western parts of Coorg, Chikmagalur, Shimoga, Dharwar and Belgaum. The soils are acidic (pH between 5 and 6) and low in bases like lime due to excessive leaching and erosion. They are poor in plant nutrients. However, in dense forest areas, the lateritic soils are covered with forest litter which makes them rich in organic matter and nitrogen. Whenever these forest lands are cleared, they are used for establishing coffee plantations which are quite common in Coorg and South Kanara.

8.3. *Red soils* are predominantly found in all the eastern districts of the State, overlying granite from which they are derived. They are very fertile as in the Bangalore and Tumkur districts, or gravelly as in parts of Mandya and Tumkur, or pale brown in colour as in the Kolar district, or red sandy loams as in the Mysore and Hassan districts. They are well-drained. Their depth varies from a few inches as in some parts of Mandya, to several feet as in the Bangalore district. They are generally neutral in reaction, with a tendency to develop acidity rather than alkalinity. They are poor in organic matter, nitrogen and available P_2O_5, but are moderately supplied with potash. The cultivated red soils of Shimoga, Hassan and Chikmagalur contain 50 per cent or more of finer fraction, and are rich in organic matter. Valuable crops like coffee, tea and cardamom are cultivated in these soils.

8.4. *Mixed red, yellow and grey soils.* These are generally sedentary soils having been formed from the underlying parent rock which is mostly granite. The texture of the surface soil in the first six inches varies from stony to sandy and loamy in the pale yellow to light red groups, and from loamy to clayey in the light red to deep red groups and in the grey group. The stickiness of red soils is due to the presence of iron concretions in the surface layer as well as in the sub-soil. Pale yellow to deep red soils have generally no lime in the sub-soil. Grey soils are usually associated with clayey sub-soils containing lime. Grey soils are sometimes found over red soils, and *vice versa.*

8.5. *Black soils* are mainly found in the districts of Bijapur, Dharwar, Belgaum, Raichur, Bidar and Gulbarga, and are akin to black soils found in the other States of the Deccan. In the uplands these soils are light-coloured and shallow, whilst they are dark, clayey and deep in the low lands. They have a high clay content, and consequently high water-holding capacity. The pH of the soils generally ranges from 7.5 to 8.5. As they are highly base-saturated and show accumulations of lime and soluble salts in the lower horizons, saline and saline-alkaline soils are found in isolated localities. Black soils are very fertile, and are well supplied with $P_2 O_5$ and K_2O. They grow good crops of jowar and cotton.

9. The important crops grown in the different soil zones are as below :—

Soil zone	Crops
Coastal alluvium	Paddy, *ragi*, cocoanut arecanut, pepper, bananas, cashewnut, betelvine, vegetables, sweet potato, ginger.
Lateritic soils	Paddy, *ragi*, coffee, arecanut, pepper, cardamom, banana, cocoanut, betelvine, turmeric, ginger, chillies, cotton (Sea Island), tobacco.
Red soils	Paddy, *ragi*, wheat, jowar, *Setaria italica*, cotton, groundnut, sugarcane, cocoanut, banana, tobacco, black gram, niger, castor.
Black soils	Paddy, jowar, wheat, cotton, groundnut, bajra, *Setaria, italica*, pulses, linseed, chillies.

Irrigation

10. The gross irrigated area in the State in the year 1957-58 was 19,48,174 acres, out of the total cropped area of 2,59,33,667 acres, representing about 7.5 per cent of the cropped area. The main source of irrigation in the State is tanks, covering a net area of 8,28,932 acres or 44 per cent of the total (net) irrigated area. Canals account for 4,31,191 acres, followed by wells covering an area of 3,15,385 acres. Other sources account for 3,00,891 acres. The main crop grown under irrigation is rice which covered 13,13,036 acres out of the total (gross) irrigated area of 19,48,174 acres.

10.1. Of the total irrigated area in the State, the district of Shimoga has the maximum area under irrigation (2,62,354 acres), followed by Chikmagalur (1,52,549 acres), Mandya (1,44,237 acres) and Belgaum (1,36,790 acres) in the order of mention.

Natural vegetation, crops grown and yields obtained

11. The State has a rich and varied flora. There are three distinct forest belts which extend from north to south. These are the evergreen belt, the deciduous belt, and the dry deciduous fuel forest. There is a valuable strip of teak forests in the deciduous belt. Sandal is another valuable tree which flourishes in the semi-moist belt.

12. The important grasses in the State are *Cynodon dactylon, Andropogon bladhii, Aristidia caerulescens, Andropogon pertusus, Eragrostis cynosuroides, and Panicum repens.*

13. The principal food crops of Mysore are *ragi* (*Eleusine coracana*), jowar, *Setaria italica,* rice and bajra. Wheat is grown mostly in the northern districts of the State. Of the cash crops, the most important are coffee, cotton, groundnut, tobacco, castor, cocoanut, arecanut, and some spices.

14. The State is the largest *ragi* producing region in the country, second largest in respect of jowar, cotton and cocoanut, and third in groundnut, tobacco and castor. It accounts for over 80 per cent of the coffee production in the country. During 1957-58, the total production of cereals was 3.1 million tons, groundnut 0.62 million tons, cotton 4.8 lakh bales, tobacco 0.02 million tons, coffee 64.12 million pounds, and cocoanut 423.58 million nuts.

15. The average yields of principal crops grown in the different districts of Mysore are given in Appendix D.

SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

16. According to the land utilisation statistics for the year 1957-58, the total area of the State may be classified as below :—

	Acres (millions)
(*i*) Forests	6·64
(*ii*) Land not available for cultivation—	
(*a*) barren and unculturable land	2·18
(*b*) land put to non-agricultural use	1·84
(*iii*) Other uncultivated land excluding fallows—	
(*a*) culturable waste	1·61
(*b*) permanent pastures and other grazing lands	4·51
(*c*) land under miscellaneous tree crops and groves	0·95
(*iv*) Current fallows	2·13
(*v*) Fallows other than current fallows	1·18
(*vi*) Net area sown	25·08
TOTAL	46·12

17. It would be observed that the total area classified as "other uncultivated lands excluding fallows" is 7.07 million acres, while the area classified as "fallows other than current fallows" is 1.18 million acres. The district-wise distribution of the area under each of the above heads is given in Appendix D.

18. Of the total area of 8.25 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", "culturable waste"—the main head under which wastelands are reported—comprises 1.61 million acres. The other important group which includes wastelands is "permanent pastures and other grazing lands", comprising a total area of 4.51 million acres. The wastelands included in the latter group are found mainly in the Chitradurga, Tumkur, Hassan, Chikmagalur and Shimoga districts.

19. In the two groups of wastelands referred to above, about 1,18,000 acres in blocks of 250 acres or more have been recommended by the State Government for reclamation. On an enquiry as to how the remaining area of about 81 lakh acres was to be accounted for, we were informed that the figures of wastelands reported under the above two heads could not be considered very reliable, and that a large proportion of these wastelands was found scattered in small pieces. For instance, although the area under wastelands in the Mysore district was reported to be about 2 lakh acres, much of it was found in blocks of less than 250 acres. In the circumstances, we suggest that a reconnaissance survey, as suggested in the introductory chapter, should be conducted so that the reclamation of wastelands in blocks of less than 250 acres in extent may also receive due consideration at the hands of the State Government.

Availability of wastelands

20. The wastelands offered for reclamation in the State may be broadly divided into the following four categories :—

I—Eroded lands,

II—*Kaval* (pasture lands),

III—Lands infested with thick growth of jungle, bushes and shrubs, and

IV—*Khar* (saline) lands.

21. The distribution of wastelands in categories I, II, III and IV in the different districts is given below :—

District	Area available in category				Total (acres)
	I	II	III	IV	
Kolar	250	—	—	—	250
Bijapur	258	—	—	—	258
Bellary	2,416	—	—	—	2,416
Gulbarga	1,377	—	—	—	1,377
Dharwar	2,730	—	1,670	—	4,400
Chitradurga ..	—	3,024	—	1,000	4,024
Tumkur	—	12,108	—	—	12,108
Hassan	—	5,635	21,172	—	26,807
Shimoga	—	—	12,443	—	12,443
Chikmagalur ..	—	—	14,759	—	14,759
South Kanara ..	—	—	1,889	—	1,889
Mysore	—	1,264	29,500	—	30,764
North Kanara ..	—	—	—	6,832	6,832
TOTAL ..	7,031	22,031	81,433	7,832	1,18,327

22. May II shows the location of blocks of wastelands in the different categories.

23. A few comments in respect of each block are given below, while fuller details are given in Appendix F.

Category I

24. Eleven blocks comprising a total area of 7,031 acres have been located for reclamation in this category as per details given below :—

District	Block No.	Area (acres)
Kolar	1	250
Bijapur	2	258
Bellary	3-4	2,416
Gulbarga	5—7	1,377
Dharwar	8—11	2,730

25. *Block* 1 comprising 250 acres is located in village Maddinayakanahalli, in the Kolar district. The soil is black and red and has a depth of 3-4 ft. The land is infested with shrubs and bushes. The average rainfall is about 20 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

26. *Block* 2 comprising 258 acres is located in village Dhawalar, and forms part of the Sindgi Community Development Block. The soil is mixed red and black, and the land has a gentle slope. The soil is poor in organic matter. The area receives a rainfall of about 12 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 40 per acre.

27. *Blocks* 3-4 are located in the Harapanahalli taluk, in the Bellary district. The total area available for reclamation in these two blocks is 2,416 acres. The land is mostly flat and is covered with shrubs and bushes. The soil is red. The area receives a rainfall of 20—25 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 75—100 per acre.

28. *Blocks* 5-6 comprising 832 acres are located in villages Itbarpur and Sulepeth, respectively, in Chincholi tehsil, in the Gulbarga district, and form part of Chincholi Community Development Block. The area is rocky at certain places and is infested with trees and shrubs. The land is hilly and undulating. The soil is mixed red and black and is barely one foot deep. The average rainfall is 20—30 inches. No irrigation is available. The cost of reclamation is estimated at about Rs. 75 per acre.

29. *Block* 7 comprising 545 acres is located in village Bhusnoor, in the Gulbarga district, and forms part of the Akand Community Development Block. The area is infested with shrubs and bushes, and can be cleared with tractors. The soil is mixed red and black. The average rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

30. *Blocks* 8—11 comprising 2,730 acres are located in the Gadag taluka, in the Dharwar district. The land is rocky and is infested with small shrubs and bushes, which can be cleared by manual labour. The soil is red. The lands are slightly eroded, and soil conservation measures will be necessary for bringing the area under cultivation. The area receives a rainfall of about 25 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 300 per acre.

31. To sum up, it may be stated that the wastelands included in category I are located in a belt with an average rainfall of 20—25 inches. As this belt suffers from low and variable rainfall, crop growing is a hazard unless suitable measures are taken for conservation of soil moisture, and for preventing the loss of soil by erosion. Contour-bunding of eroded lands followed by the adoption of a suitable system of dry farming can rehabilitate these degraded lands. These measures should, however, be adopted on a complete watershed basis.

Category II

32. Twenty-six blocks comprising a total area of 22,031 acres, most of which is classified as *kaval* lands, have been located for reclamation in this category in the districts of Chitradurga, Tumkur, Hassan and Mysore, as per details given below :—

District	Block No.	Area (acres)
Chitradurga	12—17	3,024
Tumkur	18—25	12,108
Hassan	26—34	5,635
Mysore	35—37	1,264

33. *Blocks* 12—16 comprising 2,424 acres are located in the Cahllakere taluk, in the Chitradurga district. The area is classified as *kaval* or pasture lands. The land is infested with small shrubs here and there. The soil is gravelly red and has a depth of barely 6 inches. The annual rainfall is about 17 inches. No irrigation is available. The cost of reclamation involving the construction of bunds and levelling, is estimated at Rs. 100—200 per acre.

34. *Block* 17 comprising 600 acres of forest land is located in village Yarehally, in the Chitradurga taluk of the Chitradurga disrtict. This area has been released by the Government for being granted to persons who are willing to engage themselves in co-operative farming. The land is infested with bushes and shrubs. It is also eroded, and hence soil conservation measures will be necessary. The soil is mixed red and black with a depth of barely one foot. The area receives a rainfall of about 25 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 250—300 per acre.

35. *Block* 18 comprising 1,136 acres is located in village Sira, in the jurisdiction of the Madhugiri taluka in the Tumkur district. The area has been classified as *kaval* land. It is proposed to set up co-operative farming societies for settling 100 families of landless labourers. The area is infested with shrubs and bushes. The soil is mixed red and black, and sandy in texture. Irrigation can be provided for an area of about 300 acres if wells and tanks are constructed. The cost of reclamation is estimated at Rs. 30 per acre.

36. *Blocks* 19—25 comprising 10,972 acres are located in the C. N. Halli taluka, in the Tumkur district. The area is infested with trees and shrubs. The land is gently sloping. The soil is red. The rainfall is about 27 inches. No irrigation is available. The cost of reclamation is high.

37. *Blocks* 26—30 comprising 3,071 acres are located in the Arsikere and Arkalgud talukas, in the Hassan district. Most of these areas are classified as *kaval* or pasture lands. The land is infested with small bushes and shrubs and, in some places, is slightly eroded. The soil is mostly red, although in certain places, it is black. The area receives a rainfall of 25—30 inches. No irrigation is available. Only dry farming can be practised. The cost of reclamation is estimated at Rs. 50 per acre.

38. *Blocks* 31—34. Blocks 31 and 34 are located in Holenarsipura taluka, while the other two blocks are located in Alur taluka, in the Hassan district. The total area of these four blocks is 2,564 acres. The rainfall in blocks 31 and 34 is about 27 inches, while in the other two blocks, it is about 50 inches. The soil is mixed red and black. Blocks 31, 32 and 34 are suitable for growing crops under a dry farming system of cultivation, while the land in block 33 is suitable for coffee cultivation as it is situated at a higher elevation. The cost of reclamation will be Rs. 50 per acre.

39. *Blocks* 35—37 comprising 1,264 acres of *kaval* lands are located in Krishnarajnagar taluka, in the Mysore district, and form part of the K. R. Nagar Community Development Block. The area is undulating and the land can be made fit for cultivation by adopting suitable soil conservation measures. The soil is lateritic. The average rainfall is about 30 inches. No irrigation is available. Only dry farming can be practised. The cost of reclamation is estimated at Rs. 100 per acre.

40. A general feature of the *kaval* or pasture lands is that they are situated in tracts of low rainfall ranging from 20 to 30 inches. These lands are generally poor and have barely a soil-depth of 6—12 inches. The soil is gravelly red or mixed red and black as found in the districts of Chitradurga, Tumkur and Hassan, and it is lateritic in the Mysore district. These lands are suitable for the development of pastures, and should not be opened up for arable cultivation, except in areas where there is moderate rainfall of 25 inches and above, and when the soil has sufficient depth to support the growth of crops. Even then, suitable soil and water conservation measures should be adopted for successful cultivation under conditions of low and variable rainfall, since lack of such measures will result in the failure of crops during long periods of drought and also aggravate the problem of soil erosion.

41. It was reported to us that large areas of wastelands in the districts of Chitradurga and Tumkur had been released by the Government for allotment to landless labourers for cultivation. As large tracts in these two districts are affected by scarcity conditions due to scanty rainfall, it will not be in the interest of the State to open up for arable cultivation lands which are more suited for grazing. No permanent cultivation is possible in such lands. On the other hand, we would suggest that a rapid reconnaissance survey of all wastelands, particularly those which are situated in tracts prone to scarcity conditions, should be conducted so that sub-marginal lands are not utilised for arable cultivation. This survey will provide the basis on which the District Collectors will proceed to allot lands to settlers or tenants, with the result that the lands classified as being suitable for pastures or forestry will not be used for agricultural purpoes.

Category III

42. The wastelands in category III are infested with thick growth of bushes and shrubs. Fifty-three blocks comprising an area of 81,433 acres have been located in the districts of Hassan, Shimoga, Chikmagalur, South Kanara, Dharwar and Mysore, as per details given below :—

District	Block No.	Area (acres)
Hassan	38—45	21,172
Shimoga	46—61	12,443
Chikmagalur	62—69	14,759
South Kanara	70—74	1,889
Dharwar	75—79	1,670
Mysore	80—90	29,500

43. *Blocks* 38—43 comprising 18,684 acres are located in the Manjarabad taluk of the Hassan district. The land is infested with thick growth of jungle, shrubs and bushes, and is rocky. The soil is mixed red and black. The rainfall is 130—160 inches. As the land is steep, it is more suited for growing crops like cardamom. The cost of reclamation is estimated at Rs. 300 per acre.

44. *Blocks* 44-45 comprising 2,488 acres are located in the Bajimane Estate and in village Jadek Kumari, respectively, in the Saklespur taluk of the Hassan district. The other details are the same as for blocks 38—43. The wastelands in the Bajimane Estate are, however, reserved as forest areas and may not be available for cultivation.

45. *Block* 46 comprising 1,502 acres is located in village Mussenal, in the Shimoga district. The land is over-grown with shrubs and bushes and can be cleared with the help of tractors. The soil is red. The rainfall is about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200—300 per acre.

46. *Blocks* 47—58 comprising 9,860 acres are located in the Bhadravati taluk of the Shimoga district. The area is infested with thick growth of shrubs and bushes and can be cleared with the help of tractors. The soil is mixed red and black. Irrigation is likely to be available from the Bhadra Right Bank channel. The cost of reclamation is high.

47. *Block* 59 comprising 300 acres is located in the Channagiri taluk of the Shimoga district. The area is infested with thick growth of shrubs and bushes. The soil is black. The rainfall is about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200 per acre.

48. *Block* 60 comprising 522 acres is located in village Siddlipura, in the Shimoga taluk of the same district. The area is infested with thick growth of bushes and shrubs. The soil is red and sandy in texture. The rainfall is about 35 inches. No irrigation is available. The cost of reclamation is high.

49. *Block* 61 comprising 259 acres is located in the Honnali taluk of the Shimoga district. The area is infested with thick growth of jungle and shrubs. The soil is red. The rainfall is about 40 inches. No irrigation is available. The cost of reclamation is high.

50. *Block* 62 comprising 1,000 acres is situated in village Lakkammanahally, in the Chikmagalur taluk, and forms part of the Chikmagalur Community Development Block. The area is infested with bushes and shrubs. The soil is mixed red and black. The rainfall is about 35 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

51. *Block* 63 comprising 1,517 acres is located in village Sakrapatna, Kadur taluk. The area is classified as village forest, and may not be available for cultivation.

52. *Blocks* 64—67 comprising 9,802 acres are located in the Mudigere taluk of the Mudigere Community Development Block. The area is infested with thick growth of shrubs and bushes. The land is sloping and often steep. The soil is mixed red and black. The rainfall is 150—160 inches. Only plantation crops like coffee and cardamom can be grown. The cost of reclamation, including clearance, bunding, levelling and terracing of the land, is likely to be very high.

53. *Blocks* 68-69 comprising 2,440 acres are located in the Tarikere taluk of the Chikmagalur district, and form part of the Tarikere Community Development Block. The area is infested with bushes and shrubs. The land is gently sloping. The soil is red. The rainfall is about 30 inches. Irrigation is likely to be available from the Jambadahally project now under construction. The cost of reclamation is estimated at Rs. 200 per acre.

54. *Blocks* 70—74 comprising 1,889 acres are located in the villages which fall in the jurisdiction of the Bethangady taluk of the South Kanara district, and form part of the Bethangady Community Development Block.

The area is mostly infested with shrubs and bushes, and in some places, with jungle growth. Reclamation can be done with the help of tractors. The soil is mostly red, and in some places, lateritic. Part of the area is flat, and the rest is gently sloping or steep. In the lowlands paddy can be grown, while on the slopes vegetables, sweet potato, ginger and *ragi* can be cultivated. The rainfall is 160—175 inches, most of which is received during June to September. The cost of reclamation is high.

55. *Block* 75 comprising 340 acres is located in village Hosritti, in the Haveri taluka of the Dharwar district. The land is infested with shrubs and bushes, and is rocky at some places. The soil is red. The rainfall is about 35 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200 per acre.

56. *Block* 76 comprising 407 acres is located in village Gudagudi, in the Dharwar district, and forms part of the Hanagal Community Development Block. Part of the area is infested with small bushes and shrubs, and the rest is covered by thick jungle growth. The soil is red. The area receives a rainfall of about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

57. *Block* 77 comprising 313 acres is located near village Hulsogi, in the district of Dharwar. The area is infested with shrubs and bushes. The soil is red. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

58. *Blocks* 78-79 comprising 610 acres are located in the Kalghatgi taluk of the Dharwar district, and form part of the Kalghatgi Community Development Block. The area is infested with shrubs and bushes. The soil is red and black. The rainfall is about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200 per acre.

59. *Block* 80 comprising 2,236 acres is situated at a distance of 8 miles from Hunsur in the Mysore district. It is under the Forest Department, and is not likely to be available for cultivation.

60. *Block* 81 comprising 4,566 acres is situated at a distance of five miles from Heggadadevankote, and forms part of the same Community Development Block. There is no road connecting the block with the town. The entire area is infested with thick jungle growth and can be cleared with the help of tractors. Both red and black soils are found in the block. The rainfall is about 20 inches. Irrigation can be provided if the Hanagoon-Hanumanpur nallah is improved. The cost of reclamation is estimated at Rs. 200 per acre.

61. *Blocks* 82—85 comprising 7,450 acres are located in the Gundlupet taluk of the Mysore district. The area is infested with thick growth of shrubs and bushes, and can be cleared with the help of tractors. The soil is red. The rainfall is about 30 inches. Irrigation can be provided by sinking wells. The cost of reclamation is estimated at Rs. 250—300 per acre.

62. *Block* 86 is a large-sized block comprising about 12,000 acres. It is situated near village Koppa which is about 54 miles from Mysore and 12 miles from Periyapatna, on the Mysore-Mercara road. The entire area is included in the Periyapatna Community Development Block. The

Cauvery flows at a distance of 1½ miles from village Koppa. The names of the villages comprising the block, together with the area of wastelands in each village, are given below :—

Village	Area (acres)
Girgur	385
Dodda Kosur	700
Arali Kumri	1,376
Kailas Pura	547
Gollara Hosally	319
Lakshmipura	375
Lingapura Forest	1,374
Koppa	24
Byaladakuppe	84
Sunkadahalli	301
Dodda Honnur	163
Handigudde Kaval	1,983
Doddaharave forest	1,564
Thirumalapura	783
Maradipura	467
Basavanami	1,504
TOTAL	11,949

63. According to a survey conducted some time ago, the land is overgrown with thick jungle growth, shrubs and bushes. The entire area was once under cultivation, but is now lying waste and is covered with thick jungle growth, which is composed of fuel and timber trees. There are also clusters of bamboo found scattered along the river Cauvery. The soil is black and rich in organic matter. In some places, red loamy soil is found, which is quite fertile and also well-drained. The area has an assured and well-distributed rainfall of about 50 inches, and receives both the south-west and the north-east monsoons. At present, no irrigation is available. There are, however, a number of tanks which are out of use or have silted up. If these tanks are repaired, quite a large area can be brought under irrigation. Besides, there are good prospects of providing lift irrigation from the river Cauvery, although suitable sites for locating the lift irrigation projects have yet to be investigated. The cost of reclamation is estimated at Rs. 300 per acre.

64. *Block* 86 is ideally situated for setting up co-operative colonies of landless labourers. We would deal with this subject in Section C of the report.

65. *Block* 87 comprising 999 acres consists of three sub-blocks located in villages Kellupur, Kallahally and Kothanahally, in the Nanjangud taluk of the Mysore district. The land is infested with shrubs and bushes which can be cleared by manual labour. The soil is gravelly red. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

66. *Blocks* 88—90 comprising 2,299 acres fall in the jurisdiction of the Gundlupet taluk, and are included in the Gundlupet Community Development Block. The area is infested with thick growth of shrubs and bushes.

The soil is red, and the land is gently sloping. The rainfall is 25—30 inches. Irrigation can be provided by sinking wells. The cost of reclamation is estimated at about Rs. 150 per acre.

Category IV

67. In this category, 12 blocks comprising an area of 7,832 acres have been located in the districts of Chitradurga and North Kanara.

68. *Block* 91 comprising about 1,000 acres is located in the Jagalur taluk of the Chitradurga district. The land has gone out of cultivation on account of salinity and alkalinity resulting mainly from lack of adequate drainage. The area is under the irrigation command of the Tuppadahalli tank. In order to restore the lands to their original state, it would be necessary to clear the main channel of weeds which are obstructing the flow of water, and to dig drains to draw off water from the waterlogged area. The cost of constructing the main drain is estimated at between Rs. 40,000 and Rs. 50,000 which, the cultivators plead, should be borne by the Government since no precautionary measures were taken to prevent waterlogging of the commanded area when the tank was constructed. The beneficiaries were, however, willing to dig subsidiary drains at their own cost.

69. We suggest that the Government should undertake the clearing of the channel and the construction of the main drain so as to afford relief to the cultivators whose lands have been rendered unproductive due to waterlogging. These measures will also benefit the adjoining lands which have not so far suffered any damage and are producing good crops of paddy. As regards the expenditure involved, it may be shared equally by the Government and the cultivators concerned. If necessary, *taccavi* loans may be advanced to the cultivators for their share of the expenditure.

70. Blocks 92—97. Six blocks of 2,167 acres of *khar* lands have been located in the Karwar taluka of the North Kanara district, *vide* details given in Appendix F. About 525 acres of this area are lying waste, while the remaining area is not assured of cultivation as the lands which are situated along the banks of the Kali river and the Mavinhalla nallah, are subject to tidal floods. During the periods of high tides, the sea-water inundates the lands. These lands were originally brought under cultivation by erecting protective bunds with sluice gates, whereby the ingress of salt water was prevented during high tides, and the outflow of the rain-water was controlled. But, due to the improper maintenance of these bunds and the disputes between the landlords and the tenants, the lands have now become barren. The reclamation of these lands involves the construction of bunds, and of the sluice gates and their proper maintenance. The area receives a rainfall of 130—150 inches, and can grow good crops of paddy after reclamation. The soil is alluvium. The cost of reclamation is estimated at Rs. 130 per acre.

71. *Blocks* 98—102. Five blocks comprising 4,664 acres of *khar* lands have been located in the Kumta taluka of the North Kanara district. The area is included in the Kumta Community Development Block. About 1,500 acres of this area is lying waste, and the remaining area is under indifferent cultivation. The lands are situated along the banks of the Aghanashini and Gangavati rivers and are flooded by sea-water during high tides. The problem of reclamation and other details are the same as for blocks 92—97.

72. In the erstwhile Bombay State, the State Government had set up a statutory body called the Khar Lands Development Board for bringing these lands under cultivation. Much useful work has been done by the Board, and of the total area of about 5½ lakh acres affected by salinity in the coastal districts of the former Bombay State, over 64,000 acres have so far been reclaimed. The expenditure on reclamation is initially met by the Government, and when the reclaimed lands, most of which are privately-owned, are disposed of to the owners or tenants, 60 per cent of the reclamation cost, together with a nominal occupancy price, is recovered from the grantees, and the balance is treated as subsidy. A similar scheme was in operation in the North Kanara district before the re-organisation of the States.

73. It appears that no systematic survey of the affected areas has so far been carried out in the State, except perhaps in the North Kanara district which was formerly a part of the Bombay State, and accordingly little information regarding the nature and extent of damage to the lands is available with the Agriculture Department. Realising the importance of reclaiming *khar* lands and restoring them to their original cultivable state, the Government of India have made specific provision for financial assistance to the States, and have recently requested the State Governments concerned to formulate definite proposals for undertaking this work during the Third Plan period. We recommend that a systematic survey of the saline-affected areas should be organised by the State Government, and that adequate provision for reclaiming these lands should also be made in the Third Plan.

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SECTION C

(Disposal of reclaimed lands for cultivation)

Nature of ownership of wastelands and their disposal for cultivation

74. In this Section, we deal with the various measures needed for the disposal and development of wastelands which have been located in the State. These measures would primarily depend upon the nature of ownership of wastelands. A statement showing the break-down of wastelands according to their ownerhip is given in Appendix G. It would be observed from the statement that, except for a small area of 1,082 acres, the wastelands in categories I to III belong to the Government. A very small percentage of these lands belongs to the village panchayats. In category IV (*khar* lands), however, most of the lands are privately-owned. The problems involved in the disposal of wastelands in each category of ownership are discussed below.

74.1. *Government lands.* In order to bring the wastelands belonging to the Government under cultivation, we suggest that these lands may be allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc. in accordance with the existing rules for the disposal of wastelands in the different areas of the Mysore State, namely, the former Hyderabad State area, the Coorg area, the former Mysore State area, and the areas in South Kanara, Kollegal taluk and the Bellary district. These rules are fairly comprehensive, and deal with the manner of disposal of wastelands, including the grant of lands for the cultivation of plantation crops.

74.1.1. As regards the area comprising 12,000 acres located in the Periyapatna taluk, the land is fertile and has an assured and well-distributed rainfall of about 50 inches. Although no irrigation is available at present, quite a large area can be brought under irrigation by repairing the existing tanks which are either out of use or have silted up. Besides, there are good prospects of providing lift irrigation from the river Cauvery, although suitable sites for locating the lift irrigation projects have yet to be investigated. This area can be utilised for setting up co-operative colonies of landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc. A model settlement scheme for this area is given in Appendix H.

74.2. *Private lands.* The extent of wastelands belonging to private individuals is 1,082 acres, or 10 per cent of the total area offered for reclamation in categories I to III. These lands are located in a belt suffering from low and variable rainfall, where crop growing is a hazard unless suitable measures are taken for the conservation of soil moisture, and for preventing the loss of soil by erosion. We suggest that suitable soil and water conservation measures should be adopted in these areas for successful cultivation, and that the expenditure on these measures should be shared as under :—

(*a*) 75 per cent of the expenditure may be advanced as loans to the cultivators to be recovered over a period of 10 to 15 years, and

(*b*) 25 per cent of it should be treated as subsidy to be shared equally between the Centre and the State.

74.2.1. The *khar* lands belonging to private individuals in category IV may be handed over, after reclamation, to their owners or follow-on cultivation. The pattern of financial assistance in this case has been indicated in para 72. We were informed that the entire area would be brought under cultivation immediately after reclamation as these lands were highly productive.

74.3. *Village panchayat lands.* These lands, after reclamation, may be given back to the village panchayats for arranging follow-on cultivation.

Suggestions for effective utilisation of wastelands

75. We may now make a few suggestions for the effective utilisation of wastelands offered for reclamation. We are of the view that the success in the utilisation of wastelands is achieved only if reclamation is followed by suitable follow-on cultivation operations.

76. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the eroded lands of North Mysore, and in the districts of Chitradurga, Tumkur, Hassan and Mysore where *kaval* (pasture) lands have been offered for reclamation. The necessity for this survey in regard to *kaval* lands has been emphasised in para 41 of the report.

77. In order to carry out the programme of reclamation indicated in the previous Section, particularly in connexion with the reclamation of wastelands in category III, it may be necessary for the State Directorate of Agriculture to add to the existing strength of its tractor fleet.

78. After the reclamation measures have been carried out, the responsibility for the follow-on cultivation should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. For the proper utilisation of reclaimed wastelands, the cultivators will have to be educated in the adoption of suitable soil management practices, including the dry farming system of cultivation in the wastelands in categories I and II. This can be done by organising trials and demonstrations of improved agricultural practices on cultivators' holdings, and by arranging for the supply of agricultural requisites, such as improved implements, seeds, fertilisers, etc. We attach great importance to these trials and demonstrations as the success of the reclamation projects primarily depends upon the adoption of suitable soil management practices in the reclaimed lands. The responsibility for extention work in the reclaimed lands may be transferred to the Community Development Organisation after the initial period of demonstrations.

79. Wherever irrigation facilities can be provided by the construction of wells, loans for this purpose may be given on a liberal scale to the cultivators.

80. Before the Government wastelands are allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc., these lands should be reclaimed, and the expenditure on reclamation borne by the Government.

81. In any settlement project, the selection of settlers is a vital factor contributing to its success. Accordingly, special attention should be given to this important aspect of the settlement work so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work, are selected.

82. In order that the settlement work is successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. Experience has shown that where the District Collectors and the Block Development Officers take personal interest in the settlement work, the projects are often successful.

83. The general crop patterns of the lands in the different categories vary with climate and topography. The State may, however, be divided into four crop regions, *viz.*, the coastal area, the *malnad,* the central plateau and the northern tract.

83.1. *Coastal area.* In the coastal belt, arable lands are divided into wet and garden lands. Paddy is almost exclusively cultivated in wet lands, although in some areas, *ragi,* sugarcane, arecanut, sweet potato, banana and vegetable are also grown. In the non-lateritic region in the North Kanara district, drilled paddy is cultivated. The coastal saline lands in category IV are found in this region.

83.2. *Malnad.* In the *malnad,* there are plantations of arecanut, pepper, cardamom and coffee. Besides the plantation crops, paddy, *ragi,* jowar, ginger, turmeric, tobacco, coconut, Sea Island cotton and chillies are grown. The lands in category III are found in this region, which consists of portions of North Kanara, Shimoga, Hassan, Coorg, Mysore, and western Dharwar.

83.3. The central plateau comprises the southern portion of the State, and stretches from Mysore in the south-west to Bellary in the north-east. Mandya is another typical district of this region. In the Mysore district paddy is the principal crop grown in wet lands. On dry lands, *ragi,* and *jowar* are extensively cultivated. The crops of the garden lands are cocoanut and banana. Mandya has good irrigation facilities, and *ragi,* sugarcane, cotton and tobacco are the important crops grown in this district. The district of Bellary represents the dry districts of this region. The crops grown in this district are *jowar,* bajra, *Setaria italica, ragi,* paddy, wheat, cotton, groundnut and sugarcane.

83.3.1. The grazing or *kaval* lands in category II are mostly found in this region. The eroded wastelands in category I are found in the eastern part of this region in the districts of Bellary and Kolar.

83.4. In the northern tract there is a narrow belt on the west, which has assured rainfall of 30 to 35 inches. It is called *gadinad* or transition tract. The main crops of this tract are jowar, cotton, groundnut and paddy in the *kharif* season, and wheat in the *rabi* season. The eastern part of the northern tract is subject to scarcity conditions as the rainfall is low and variable. This tract comprises Bijapur, Gulbarga, and the eastern parts of Dharwar and Belgaum districts. The main crops are *jowar, bajra,* wheat, pulses, cotton, groundnut and linseed.

83.4.1. The eroded wastelands in category I are found in this region. In the *gadinad* tract of the Dharwar district, the wastelands in category III are found.

Economic aspects of reclamation

84. We shall now examine the economic aspects of reclamation in terms of the addition to food production with reference to the expenditure involved. At present, no reliable figures of additional yields of food-crops

expected to be obtained from reclaimed lands are available. However, our visits to some of the areas where reclamation work is to be carried out, have given us some idea of the potentialities of those areas. A brief statement of the potentialities in respect of each category of wastelands is given below.

85. The eroded wastelands in category I are found in the districts of Gulbarga, Bijapur, Dharwar, Bellary and Kolar, which receive a rainfall of about 20 inches. Except in Kolar where there is hardly any cotton cultivation, the important crop rotation followed in these districts is cotton, *jowar* and groundnut. *Bajra* is cultivated in lighter soils in the *kharif* season. In these districts, the average yield per acre of jowar ranges from 153 lb. to 317 lb., of bajra from 72 lb. to 310 lb., of groundnut from 50 lb. to 703 lb., and of cotton from 33 lb. to 91 lb. (lint)*. It is obvious that the yields of crops grown in these districts are low, and crop growing is a hazard unless suitable measure are adopted for the conservation of soil moisture. Experiments conducted in the past have shown that contour-bunding of eroded lands followed by a suitable dry farming system of cultivation, increases the yields of crops appreciably. We may assume an average yield of 5 maunds of foodgrains if suitable soil and water conservation measures are adopted in the reclaimed lands (if crops like cotton and groundnut are grown, their equivalents in terms of foodgrains crops are taken into account).

86. As regards *kaval* or pasture lands in category II, we are not in favour of opening up these lands for arable cultivation, except those lands which are located in tracts of moderate rainfall and which have sufficient soil-depth to support the growth of crops. Even then, the adoption of suitable soil and water conservation measures would be necessary for successful crop production. Lack of soil conservation measures in these lands will aggravate the problem of soil erosion, and will lead to failure of crops during long periods of drought. In the circumstances, we have recommended that rapid surveys of *kaval* lands should be conducted with a view to locating areas where pasture lands could be diverted to arable cultivation without any risk of causing damage to these lands by soil erosion. Until this information on land-use is available, we hesitate to recommend the use of waste-lands which are more suited for the development of pastures, for arable cultivation.

87. As regards the wastelands in category III, these are found in the districts of Hassan, Chikmagalur, South Kanara, Mysore and Dharwar. The wastelands in the first two districts are found in hilly areas with a rainfall exceeding 100 inches, and are more suited for growing plantation crops like cardamon and coffee, which are highly remunerative cash crops. In South Kanara, the average yield of paddy is about 15 maunds per acre, and the returns from crops like ginger, sweet potatoes, etc., grown along the hill slopes may be estimated at Rs. 200 to Rs. 300 per acre. In the Shimoga district, the yield of paddy may be reckoned as 15 maunds, of *ragi* as 6 maunds, and of horse-gram as 4 maunds. In the Mysore district a variety of crops are cultivated, and the average yield of paddy or *ragi* may be taken as 12 maunds. Similar yields are obtained in the transition or *gadinad* tract of Dharwar. On a conservative estimate, we may assume the yield of 8 maunds of foodgrains per acre.

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*The latest figures of yields of crops in these five districts are available for 1956-57, which was a scarcity year. Hence the crop yields are low.

88. Experience has shown that *khar* lands do not regain their natural productivity for some time after reclamation, and it is usually after the third year that normal yields are obtained. We may assume a yield of 12 maunds of paddy from an acre of reclaimed land.

89. To assess the relative economic benefits of reclamation between the different categories of relcaimable lands, the figures of estimated additional food production should be studied in relation to the cost of reclamation and other relevant factors. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional food production.

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TABLE I

Cost of reclamation of land in the three categories and estimated additional production

Category	Description	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional production per acre (maunds)	Total additional production (maunds)	*Value of total additional production (Rs.)	*Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I	Eroded lands	7,031	167	11,73,070	5	35,155	4,21,860	60	33·4
III	Lands infested with thick growth of jungle, shrubs and bushes.	**53,957	267	1,44,07,250	8	4,31,656	51,79,872	96	33·3
IV	*Khar* (saline) lands	7,832	120	9,38,160	12	93,984	11,27,808	144	10·0
	TOTAL	68,820		1,65,18,480		5,60,795	67,29,540		

*A common price of Rs. 12 per maund is assumed.

**Excludes 22,332 acres of wastelands of which the cost of reclamation has been reported to be very high. The cost of reclamation could not be verified. Also excludes 5,144 acres of forest areas which may not be available for cultivation.

90. It would be seen from the table that the cost of reclaiming 68,820 acres of wastelands in categories I, III and IV (exclusive of the lands of which the cost of reclamation has been reported to be very high, and of the forest areas which may not be available for cultivation) comes to about Rs. 1.65 crores, *i.e.*, about Rs. 236 per acre. The estimated additional production from the reclaimed lands is 20,530 tons valued at Rs. 67.29 lakhs. The average cost of reclamation, therefore, is economic in terms of additional food production, since the cost of reclamation can be recovered in three crop seasons. The lands of which the cost of reclamation has been reported to be high, are those which are located in the districts of Chikmagalur, Shimoga and South Kanara. We could not verify the figures of expenditure involved in reclamation, and we, therefore, recommend that a study of the economic aspects of reclaiming these lands with reference to the cost of reclamation and the estimated additional production may be made before undertaking any reclamation measures.

91. As regards the economics of reclamation between the three categories of wastelands, the areas included in category IV (*khar* lands) seem to be the most profitable in terms of additional food production, which is about 12 maunds for an expenditure of about Rs. 120 per acre on land improvement. On the other hand, category III offers the greatest promise for increasing agricultural production since large areas of lands infested with thick growth of jungle, shrubs and bushes are available in the districts of Hassan, Chikmagalur, South Kanara, Mysore and Dharwar. Some of the wastelands in this category, found in the hilly areas with a rainfall exceeding 100 inches, are suitable for growing plantation crops which are highly remunerative. The other lands are located in favourable areas with rainfall ranging from 30 to 50 inches, and are, after reclamation, capable of producing good crops. As regards category I, the extent of areas offered for reclamation is rather small, but it is likely that more areas, some of them privately-owned, may be found in the districts of North Mysore. The results of experiments conducted in the former Bombay State have shown that the adoption of a suitable system of dry farming in the eroded lands not only reduces the risk of crop failures but appreciably increases crop yields.

Priorities between the three categories of reclaimable lands

92. We now come to the assignment of priorities between the three categories of reclaimable lands found in the State.

92.1. We recommend that the wastelands included in category IV (*khar* lands) may be assigned the highest priority in view of the fact that reclaimed lands are capable of producing good crops of paddy two or three years after reclamation.

92.2. The wastelands included in category III should also be assigned an equally high priority because large tracts of these lands are available which, when reclaimed, will assist in increasing agricultural production in the State.

92.3. The wastelands included in category I may be assigned the next order of priority.

SECTION D

(Summary of general conclusions and recommendations)

1. Of the total area of 8.25 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", about 1,18,000 acres of wastelands in blocks of 250 acres or more have been located for reclamation. This area is relatively small as a large proportion of wastelands is found scattered in small pieces, and the figures of wastelands reported under the above two heads are not very reliable.

(*Paragraph* 19)

2. The wastelands offered for reclamation in the State may be broadly divided into the following four categories :—

I—Eroded lands,

II—*Kaval* (pasture) lands,

III—Lands infested with thick growth of jungle, bushes and shrubs, and

IV—*Khar* (saline) lands

(*Paragraph* 20)

3. The distribution of wastelands in the four categories is as under :—

Category	Area (acres)
I	7,031
II	22,031
III	81,433
IV	7,832
TOTAL	1,18,327

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(*Paragraph* 21)

4. The wastelands included in category I are situated in a belt where low and variable rainfall is received, and hence crop growing is a hazard unless suitable measures are taken for conservation of soil moisture, and for preventing the loss of soil by erosion. Contour-bunding of eroded lands followed by the adoption of a suitable system of dry farming will rehabilitate these degraded lands.

(*Paragraph* 31)

5. The wastelands included in category II are located in tracts of low rainfall ranging from 20 to 30 inches. These lands are generally poor and have barely a soil-depth of 6—12 inches. The soil is gravelly red or mixed red and black as found in the districts of Chitradurga, Tumkur and Hassan, and it is lateritic in the Mysore district. These lands are suitable for the development of pastures, and should not be opened up for arable cultivation, except in areas where there is a moderate rainfall of 25 inches and above and the soil has sufficient depth to support the growth of crops. Even then, suitable soil and water conservation measures should be adopted for successful crop production.

(*Paragraph* 40)

6. The wastelands in category III are infested with thick growth of shrubs and bushes and can be developed for growing food and plantation crops. These lands are situated in tracts receiving a rainfall of 30—50 inches, or in areas of high rainfall ranging from 100 to 175 inches. The soil is either black or mixed red and black.

(*Paragraphs* 42—66)

7. In category III is included a large-sized block comprising about 12,000 acres. It is situated near village Koppa, which is about 54 miles from Mysore and 12 miles from Periyapatna on the Mysore-Mercara road. The area is covered with thick jungle growth which is composed of fuel and timber trees. The soil is black and rich in organic matter. In some places, red loamy soil is found, which is fertile and well-drained. The area has an assured and well distributed rainfall of about 50 inches and receives both the south-west and the north-east monsoons. At present no irrigation is available, but there are good prospects of providing irrigation by undertaking repairs to the tanks which have gone out of use, or by providing lift irrigation from the river Cauvery. The area is ideally suited for setting up co-operative colonies of landless labourers.

(*Paragraphs* 62—64)

8. The wastelands included in category IV comprising 7,832 acres of saline lands are in the Chitradurga and North Kanara districts. These lands, after reclamation, can grow good crops of paddy.

(*Paragraphs* 67—71)

9. A systematic survey of saline-affected lands in the State should be organised by the State Government, and adequate provision for reclaiming these lands should also be made under the Third Plan.

(*Paragraph* 73)

10. Most of the wastelands in categories I to III belong to the Government, and only a small area belongs to private individuals and village panchayats. In category IV (*Khar* lands), however, most of the lands are privately-owned. In order to bring the lands belonging to the Government under cultivation, allotments may be made to the members of the Scheduled Castes and the Scheduled Tribes, etc., in accordance with the existing rules for the disposal of wastelands in the different regions of the State.

(*Paragraphs* 74 *and* 74.1)

11. The wastelands belonging to private individuals in categories I to II may be reclaimed by undertaking suitable soil and water conservation measures, and the expenditure on these measures should be shared as under :—

(*a*) 75 per cent of the expenditure may be advanced as loans to the cultivators to be recovered over a period of 10—15 years, and

(*b*) 25 per cent of it should be treated as subsidy to be shared between the Centre and the State.

(*Paragraph* 74.2)

12. The *khar* lands belonging to private indivdiuals should be handed over, after reclamation, to their owners for follow-on cultivation.

(*Paragraph* 74.2.1)

13. The lands belonging to village panchayats may be given back to them for arranging follow-on cultivation.

(*Paragraph* 74.3)

14. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the eroded lands found in North Mysore, and in the districts of Chitradurga, Tumkur, Hassan and Mysore where *kaval* (pasture) lands have been offered for reclamation.

(*Paragraph* 76)

15. In order to carry out the programme of reclamation of wastelands in category III, it will be necessary for the State Directorate of Agriculture to add to the existing strength of its tractor fleet.

(*Paragraph* 77)

16. After the reclamation measures have been carried out, the responsibility for follow-on cultivation should be that of the normal staff of the Agriculture Department which, if necessary, may be strengthened. Trials and demonstrations of improved agricultural practices should be organised on cultivators' holdings, so that they may adopt suitable soil management practices in reclaimed lands. The responsibility for extension work may be transferred to the Community Development Organisation after the initial period of demonstration.

(*Paragraph* 78)

17. Wherever irrigation facilities can be provided by the construction of wells, loans for this purpose may be given on a liberal scale to the cultivators.

(*Paragraph* 79)

18. Before the Government wastelands are allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc., these lands should be reclaimed, and the expenditure on reclamation borne by the Government.

(*Paragraph* 80)

19. Special attention should be given to the selection of settlers so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work, are selected.

(*Paragraph* 81)

20. In order that the settlement work may be successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible.

(*Paragraph* 82)

21. The total cost of reclaiming 68,820 acres of wastelands in categories I, III and IV (exclusive of the lands of which the cost of reclamation has been reported to be very high, and of the forest areas which may not be available for cultivation) comes to about Rs. 1.65 crores, *i.e.*, about Rs. 236 per acre. The estimated additional production from the reclaimed lands is 20,530 tons valued at Rs. 67.29 lakhs. The average cost of reclamation, therefore, is economic in terms of additional production.

(*Paragraph* 90)

22. A study of the economics of reclamation between the three categories of wastelands reveals that the areas included in category IV (*khar* lands) are the most profitable in terms of additional production. On the other hand, category III offers the greatest promise for increasing agricultural production since large areas of lands infested with thick growth of jungle, shrubs and bushes are available in the State. The extent of wastelands offered for reclamation in category I is small, but the adoption of a suitable system of dry farming in these lands not only reduces the risk of crop failures but appreciably increases the crop yields.

(*Paragraph* 91)

23. The wastelands included in category IV (*khar lands*) may be assigned the highest priority. The wastelands in category III should also be assigned an equally high priority since large tracts of these lands are available, which, when reclaimed, will assist in increasing agricultural production in the State. The wastelands included in category I may be assigned the next order of priority.

(*Paragraphs* 92.1 *to* 92.3)

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Sd/-
(B. N. Uppal)
Chairman

Members

Sd/-
1. (F. C. Gera)

Sd/-
2. (J. P. Mital)

Sd/-
3. (M.S.V. Rama Rao)

Co-opted members

Sd/- R. J. Rabello
Chief Secretary

Sd/- M. S. Swaminathan
Revenue Secretary

Sd/- M. H. Minchigiah
Chief Engineer
(Irrigation and Public Health)

Sd/- M. L. Subbanna
Joint Secretary of Agriculture
(Extension)

Sd/-
(A. S. Venu Gopalan)
Secretary

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Appendices

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
SECRETARY.

No. F. 1024/*SPL*/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE
(*Department of Agriculture*)

New Delhi, June 11, 1959.

My dear

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories :

(*a*) lands which are really adjuncts of village abadis and are meant to serve as pastures and fuel forests or sites for the extension of the abadis; and

(*b*) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the later category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become

available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committee will consist of the following :—

1.	Dr. B. N. Uppal, Agricultural Commissioner, Government of India	Chairman
2.	*Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India	Member
3.	Shri F. C. Gora, Chairman, Central Tractor Organisation	Member
4.	Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	Member

In addition, the Committee will co-opt in individual States the following officers :—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours sincerely,
Sd./-
K. R. Damle

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Government of India, was appointed a Member from the 3rd February, 1960 vide Memo. No. 12-1/59- GMF (Co) dated the 3rd February, 1960 (Copy enclosed).

No. F. 12-1/59-*GMF(CO)*.

GOVERNMENT OF INDIA

MINISTRY OF FOOD & AGRICULTURE

(*Department of Agriculture*)

New Delhi the 3rd February, 1960.

Subject :—Reclamation of culturable wastelands in the country—Setting up of a Committee.

Reference this Ministry's Express letter of even number, dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D. O. No. F. 1024/SPL/59, dated the 11th June, 1959, referred to therein :—

"Shri M. S. V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,
in place of Dr. J. K. Basu since retired".

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Sd./-

V. Balasubramanian
Under Secretary.

APPENDIX 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee

---

1. What is the total area of culturable wasteland in your State?

   (Culturable waste land is defined as under :—

   All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?
3. What is the extent of land under miscellaneous trees and groves?
4. What is the extent of fallow lands other than current fallows? (Current fallows are defined as those lands which remain fallow for the current year only.

   Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?
6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.
7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.
8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :

DISTRICT :

Details in respect of Block No.——————————*consisting of 1,000 acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?

11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the Colonization operations in the block successfully ?

12. If so, what would be the likely cost of acquisition ?

13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted ?

14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.

15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors ? If the former, is adequate labour locally available ?

16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded ? if eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.

17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block ?

18. What is the type of soil in the block ? (alluviums, black, red or lateritic).

19. Is the land flat or gently sloping or steep ? What is the depth of the soil ?

20. What crops are grown in the area round about the block ?

21. What is the yield per acre of each crop?
22. What is the nearest marketing centre for those crops?
23. What is the extent and distribution of rainfall in the area?
24. Can irrigation facilities be made available for the block? If so, what kind of facilities?
25. Whether these irrigation facilities will be perennial or non-perennial?
26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year Plan will cover this land?
27. What is the depth of sub-soil water? Is water sweet or brackish?
28. Are anti-malarial operations necessary in the area for successful colonization?
29. Is any endemic disease prevalent in the area? If so, do the State Government contemplates any measures to combat this disease?
30. Is drinking water available in the block?
31. Are there any drinking water wells in use?
32. Is the area subject to depredations of wild animals? If so, what animals?
33. Is the Block likely to attract settlers from distant places in the State or from other States?
34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block?

35. Do you think educated unemployed could be successfully settled in the block ?

36. What should be the unit of allotment per settler ?

37. Would you suggest that the settlers should put up their homesteads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi* ?

38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on cooperative basis).

39. Any other details which you may like to give in the light of the terms of reference.

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APPENDIX 'C'

Dr. B. N. Uppal,
Chairman, Wastelands Survey
and Reclamation Committee.

D.O. No. /59-*WLS&RC*

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(*Department of Agriculture*)
'Krishi Bhavan'
NEW DELHI

January 2, 1960
Paus 12, 1881.

Dear Shri

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the

information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,

B. N. Uppal

Sd./-

All Liaison Officers
in the States and Union Territories.

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APPENDIX D

Statement showing yield per acre (in lbs.) of principal crops in Mysore—1956-57

District/crop	Rice	Jowar	Bajra	Ragi	Wheat	Gram	Chillies	Ground-nut	Coconuts	Cotton	Tobacco
Bangalore	905	—	18	788	—	307	153	490	984	116	264
Kolar	911	314	323	974	413	72	395	613	3,946	—	392
Tumkur	832	262	690	505	—	319	123	489	696	211	1,407
Mysore	1,433	264	127	602	155	257	177	194	1,490	99	206
Mandhya	1,260	90	—	878	—	146	301	341	4,905	446	447
Hassan	1,194	125	—	698	—	462	199	548	2,764	311	238
Shimoga	1,209	442	—	827	548	288	222	235	940	78	136
Chikmagalur	997	578	224	599	955	619	168	420	2,070	218	119
Chitradurga	515	342	344	707	236	219	196	506	1,404	184	443
Bellary	346	259	184	611	246	111	512	723	286	91	201
Dharwar	919	317	191	703	219	291	215	683	1,928	36	495
Belgaum	899	277	214	669	312	302	198	936	—	95	504
Bijapur	216	153	105	193	173	172	396	456	—	33	189
Bidar	499	458	126	709	288	315	200	523	—	60	438
Raichur	504	221	278	707	123	285	162	460	815	59	219
Gulburga	384	122	134	710	157	310	140	503	—	39	474
South Kanara	913	—	—	638	—	—	171	311	1,436	—	13
North Kanara	1,007	464	—	614	508	181	248	767	4,845	—	—
Coorg	1,649	—	—	709	—	—	242	960	6,354	—	320
State	1,000	225	176	719	208	284	207	577	1,830	61	434

APPENDIX E

Land utilisation statistics for Mysore for the year 1957-58

(District-wise)

(In acres)

District	Total geographical area		Forests	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows current other than fallows	Neta sown
	By professional survey	By village papers		Barren and uncultur-able Land	Land put to non-agri-cultural uses	Culturable waste	Perma-nent and other grazing lands	Land under miscella-neous tree crops and groves			
Bangalore	1,971,648	1,641,180	198,697	89,318	109,024	57,154	246,368	9,058	64,048	14,251	853,262
Kolar	2,040,180	1,793,701	168,762	100,336	144,077	49,982	514,362	28,867	109,777	30,544	646,994
Tumkur	2,621,466	2,617,488	115,090	164,459	153,929	16,723	460,071	97,070	209,864	102,445	1,209,837
Mysore	2,957,779	2,767,949	766,731	216,106	104,738	04,079	339,268	18,171	72,509	57.198	1,077,149
Mandya	1,226,752	1,137,246	42,261	43,683	82,684	134,755	181,930	2,002	75,108	20,153	554,670
Hassan	1,658,102	1,602,042	61,640	53,706	125,398	74,145	358,809	16,440	247,526	32,942	631,436
Shimoga	2,602,343	2,546,451	366,684	128,495	224,756	119,415	625,721	219,727	1,070,740	58,974	631,939
Chikmagalur	1,783,712	1,745,985	343,734	117,462	58,857	88,162	536,232	27,792	55,530	51,570	466,646
Chutaldurg	2,678.233	2,649,009	214,307	82,760	133,934	80,828	448,278	35,537	142,627	192,313	1,318.425
Bellary	2,448.109	2,450,563	378,661	141,412	176,775	106,511	17,496	10,187	110,358	66,037	1,443,126
Dharwar	3,394,054	3,404,266	279,229	147,701	16,116	33,654	99,295	15,495	30,025	66,847	2,715,904
Belgaum	3,258,477	3,308,466	484,565	150,265	4,125	44,824	108,732	1,477	48,739	158,887	2,306,852
Bijapur	4,217,696	4,230,634	208,043	49,766	61,113	29,327	80,451	8,015	118,953	73,336	3,556,630
Bidar	1,326,208	1,335,287	13,555	41,253	42,952	53,342	71,690	9,474	124,868	77,628	900,525
Raichur	3,524,992	3,438,328	34,813	178,981	95,199	45,314	109,747	31,280	262,002	30,240	2,650,752
Gulburga	4,062,426	3,929,947	77,709	115,234	77,266	93,187	146,311	11,252	190,115	74,848	3,144,025
South Kanara	2,080,013	2,031,464	533,921	200,665	132,290	191,472	84,206	295,601	88,699	34,778	469,832
North Kanara ..	2,537,677	2,526,826	2,059,739	43,339	41,135	53,841	2,973	7,922	3,629	30,024	284,224
Coorg	1,018,490	1,011,685	341,982	75,131	51,214	132,223	75,854	102,939	1,336	11,621	219,385
State	47,438,362	46,168,517	6,690,123	2,185,072	1,835,582	1,608,938	4,507,794	948,306	2.126.453	1,184,636	25.081.613

APPENDIX F

Statement showing the details of blocks offered for reclamation in different districts

District (1)	Name of Block (2)	Block No. (3)	Nearest Railway station (4)	Whether accessible by all/fair weather road (5)	Whether includ-ed in C. D. Block (6)	Area (acres) (7)	Rainfall (inches) (8)	Depth and nature of sub-soil water (feet) (9)	Endemic disease (10)
				Category I					
Kolar ..	.. Maddinayakane Halli	1	Gorgum	Fair weather	No	250	20	25, sweet	No
Bijapur ..	.. Dhawalar	2	Bijapur	All weather	Yes	258	12	N.A.	No
Bellary ..	.. K. Kallahalli	3	Harihar	No road	No	1,724	25	60, sweet	No
	Myalikalti	4	Harihar	No road	No	692	22	50, sweet	No
Gulburga ..	.. Itbarpur	5	Chitguppa	No road	Yes	436	20—30	N.A.	No
	Sulepeth	6	Nawandgi	All weather	Yes	396	30	N.A.	No
	Bhusnoor	7	Gulburga	No road	Yes	545	30	50, sweet	No
Dharwar ..	.. Nabhapur	8	Gadag	Fair weather	No	735	25	50, sweet	No
	Papandshi	9	Gadag	All weather	No	887	25	80, sweet	No
	Advisomapur	10	Gadag	All weather	No	607	25	80, sweet	No
	Sortur	11	Gadag	All weather	No	500	25	80, sweet	No
				Category II					
Chitradurga	.. Nerlagunte	12	Chitradurga	All weather	No	1,000	17	20, sweet	No
	Rekhalgere	13	Chitradurga	Fair weather	No	324	17	30—40, sweet	No
	Doddaullarthi	14	Chitradurga	Fair weather	No	300	17	25—30, sweet	No
	Nerlagunte	15	Chitradurga	Fair weather	No	500	17	20—30, sweet	No
	Mallurahalli	16	Chitradurga	Fair weather	No	300	17	20—30, sweet	No
	Yarehally	17	Chitradurga	No road	No	600	25	80—100, sweet	No
Tumkur ..	.. Sira	18	Tumkur	All weather	Yes	1,136	27	30, sweet and brackish.	No
	Kodihalli	19	Banasandra	Fair weather	Yes	1,500	27	Sweet	No
	Mylukabbo	20	Banasandra	Fair weather	Yes	1,600	27	Sweet	No
	Hasrihal	21	Banasandra	Fair weather	Yes	2,000	27	Sweet	No
	Doddarampura	22	Banasandra	Fair weather	Yes	1,100	27	Sweet	No
	Jajehar	23	Banasandra	Fair weather	Yes	1,400	27	Sweet	No
	Sondenahalli	24	Banasandra	Fair weather	Yes	2,072	27	Sweet	No
	Bellara	25	Banasandra	Fair weather	Yes	1,300	27	Sweet	No

APPENDIX F (*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Hassan	Manjenahalli	26	Bageshpur	All weather	Yes	500	25	40, sweet	No
	Magge Kaval	27	Holenarsipur	Fair weather	Yes	744	28	Sweet	No
	Koratikere Kaval	28	Holenarsipur	Fair weather	Yes	544	46	Sweet	No
	Kutakamarti	29	Holenarsipur	Fair weather	No	783	28	Sweet	No
	Gubbi forest	30	Holenarsipur	Fair weather	No	500	28	Sweet	No
	Mara-halli	31	Hosaagrahara	All weather	Yes	230	27	50—60, sweet	No
	Karjuvalli	32	Hassan	No road	Yes	272	50	Sweet	No
	Madihalli	33	Hassan	No road	Yes	256	50	Sweet	No
	Golipura	34	Holenarsipur	All weather	Yes	1,806	27	Sweet	No
Mysore	Saligrama I	35	Bherya	All weather	Yes	299	30	N.A.	No
	Saligrama II	36	Bherya	All weather	Yes	306	30	N.A.	No
	Chikka Bherya	37	Akkchubbal	All weather	Yes	661	30	N.A.	No
				Category III					
Hassan	Hallahalli	38	Hassan	Fair weather	Yes	11,181	120—150	80, sweet	No
	Markahalli	39	Hassan	All weather	Yes	1,525	120—150	80, sweet	No
	Yathahalli	40	Hassan	Fair weather	Yes	2,381	150—180	80, sweet	No
	Battekumari	41	Hassan	Fair weather	Yes	1,261	150—180	80, sweet	No
	Hongadahalla	42	Hassan	Fair weather	Yes	1,001	120—150	80, sweet	No
	Balehalla	43	Hassan	Fair weather	Yes	1,335	140—180	80, sweet	No
	Bajimane	44	Hassan	Fair weather	Yes	1,391	150—180	80, sweet	No
	Yetkkumari	45	Hassan	Fair weather	Yes	1,097	150—180	80, sweet	No
Shimoga	Mussenal	46	Shimoga	Fair weather	Yes	1,502	40	50, sweet	No
	Nagoli	47	Bhadravathi	Fair weather	No	1,316	30	Sweet	No
	Danavadi	48	Bhadravathi	Fair weather	No	1,575	30	Sweet	No
	Ittegehalli	49	Bhadravathi	No road	No	603	35	Sweet	No
	Bhadrapura	50	Bhadravathi	Fair weather	No	820	30	Sweet	No
	Belligere	51	Bhadravathi	Fair weather	No	352	32	Sweet	No
	Harogundi	52	Bhadravathi	No road	No	1,138	35	Sweet	No
	Bommanakatte	53	Bhadravathi	Fair weather	Yes	1,085	30	Sweet	No
	Yadehalli	54	Bhadravathi	Fair weather	No	767	35	Sweet	No
	Malligenahalli	55	Bhadravathi	Fair weather	No	387	31	Sweet	No
	Rangapura	56	Bhadravathi	Fair weather	No	654	30	Sweet	No
	Dodderi	57	Bhadravathi	Fair weather	No	373	33	Sweet	No
	Gudamgatta	58	Bhadravathi	Fair weather	No	793	35	Sweet	No
	Dondaraghatta	59	Hoallhere	All weather	No	300	40	N.A.	No
	Siddlipura	60	Kotegangoor	Fair weather	Yes	522	35	50, brackish	No
	Arakeri	61	Harihar	Fair weather	Yes	259	40	50, sweet	No

APPENDIX F (*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Chikmagalur ..	Lakhammanahally	62	Kadur	No road	Yes	1,000	35	N.A.	No
	Sak-rapatna	63	Kadur	Fair weather	Yes	1,517	30	50, sweet	No
	Irabage	64	Hassan	All weather	Yes	2,286	260	100, sweet	No
	Byrapura	65	Hassan	All weather	Yes	4,280	160	100, sweet	No
	Byrapura	66	Hassan	All weather	Yes	1,281	160	100, sweet	No
	Koove Balur	67	Kadur	All weather	Yes	1,955	150	100, sweet	No
	Duggalapura	68	Tarikere	Fair weather	Yes	946	25—32	30, brackish	No
	Siddarahalli	69	Tarikere	Fair weather	Yes	1,494	25—32	30, brackish	No
South Kanara ..	Kalia & Vodilal	70	Mangalore	All weather	Yes	629	160—170	30—60, sweet	No
	Karaya, Barya and Thanerpantha	71	Mangalore	All weather	Yes	510	160—175	30—60, sweet	No
	Parenki	72	Mangalore	All weather	Yes	250	160—175	30—50, sweet	No
	Truval	73	Mangalore	All weather	Yes	250	160—175	30—50, sweet	No
	Belal	74	Mangalore	All weather	Yes	250	160—175	25—40, sweet	No
Dharwar	Hasrithi	75	Hasrithi	All weather	No	340	34	N.A.	No
	Gudagudi	76	Haveri	Fair weather	Yes	407	38—40	N.A.	No
	Hulsogi, Balagali and Gotaguddi	77	Saranur	Fair weather	No	313	32	22, sweet	No
	Shivganahalli	78	Hubli	Fair weather	Yes	310	40	50, sweet	No
	Kalsanakup	79	Dharwar	Fair weather	Yes	300	30	40, sweet	No
Mysore ..	Hunsur	80	Krishnarajanagar	All weather	Yes	2,236	24	30, sweet	No
	Chikkakereyu	81	Mysore	No road	Yes	4,566	25—30	6, sweet	No
	Kotekera	82	Nanjangud	No road	Yes	1,057	25—30	Sweet	No
	Keriyanapura	83	Chamarajanagar	Fair weather	Yes	3,484	25—30	Sweet	No
	Mangala	84	Chamarajanagar	Fair weather	Yes	1,199	25—30	Sweet	No
	Baragi	85	Chamarajanagar	No road	Yes	1,710	25—92	Sweet	No
	Harnahalli Hobli	86	Krishnarajanagar	No road	Yes	11,950	N.A.	Sweet	No
	Kellupur, Kalha Hally, Kothanahally	87	Nanjangud	All weather	No	999	30	Brackish	No
	Kottekere	88	Gundlupet	All weather	Yes	1,057	30	Sweet	No
	Lokkere	89	Gundlupet	All weather	Yes	602	30	Sweet	No
	Hanagala Hobli	90	Gundlupet	All weather	Yes	640	30	Sweet	No
Category IV									
Chitradurga ..	Jogalur	91	Londa	All weather	Yes	1,000	30	**Sweet**	No
North Kanara ..	Chitakula & Kansgeri	92	Londa	All weather	Yes	262	130—**140**	**Saltish**	No
	Majali, Chitakula, Arav, Hoshi & Kolge	93	Londa	All weather	Yes	631	130—140	Saltish	No

APPENDIX F (*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
North Kanara (*contd.*)	Ghadasi	94	Londa	All weather	Yes	307	130—140	Saltish	No
	Kinner	95	Londa	All weather	Yes	302	130—140	Saltish	No
	Kadvad	96	Londa	All weather	Yes	364	130—140	Saltish	No
	Shirvad	97	Londa	All weather	Yes	303	130—140	Saltish	No
	Naduraskeri, Harusamasakeri, Bankikodla and Hanehalli	98	Hubli	All weather	Yes	370	140	Saltish	No
	Kelginstala, Betkuli, Bargi and Bargigazni.	99	Hubli	All weather	Yes	1,031	140	Saltish	No
	Hiregutti, Yennemidi, Midlegazni, Morbe and Balale	100	Hubli	All weather	Yes	1,401	140	Saltish	No
	Torke, Madangeri and Hittalmekki	101	Hubli	All weather	Yes	798	140	Saltish	No
	Baad, Gudeangdi, Menikatta, Hegde	102	Hubli	All weather	Yes	1,064	140	Saltish	No

N.A.—Not available.

APPENDIX G

Statement showing the break-down of wastelands according to the nature of ownership

Category	Area (acres)	Area (in acres) belonging to		
		Government	Private individuals	Village panchayats
I	7,031	6,127	404	500
II	22,031	21,353	678	—
III	81,433	81,433	—	—
IV	7,832	*	*	*
	1,18,327	1,08,913	1,082	500

*Data regarding the actual extent of wastelands belonging to the Government, private individuals and village panchayats are not available, but it is reported that most of the lands in this category are privately owned.

APPENDIX H

Model Scheme for settlement of landless labourers particularly the Scheduled Castes and Tribes and unemployed agricultural graduates on a co-operative basis.

A large area comprising 12,000 acres of wastelands is available in the Periyapatna taluk, which can be utilised for settlement of landless labourers, particularly the Scheduled Castes and Tribes and unemployed agricultural graduates. The land is fertile and has an assured and well-distributed rainfall of about 50 inches. Although no irrigation is available at present, quite a large area can be brought under irrigation by repairing the existing tanks which are either out of use or have silted up. Besides, there are good prospects of providing lift irrigation from the river Cauvery, although suitable sites for locating the lift irrigation projects have yet to be investigated. A variety of agricultural crops can be grown, and, on an average, *ragi*, which is the principal crop of this area, can give yields of 1,600 lbs. per acre. The production of tobacco leaf is about 500 lb. per acre. The area is also suitable for growing Sea Island cotton. This area has thus great agricultural potentialities, and is very suitable for colonisation.

A model settlement scheme for the area is given below.

It is proposed to settle on these lands landless labourers, particularly Scheduled Castes and Tribes and unemployed agricultural graduates, on a co-operative basis. It is not intended to present a rigid scheme since flexibility of details to suit local conditions is the *sine qua non* of the success of the settlement Scheme. The co-operative method of organisation can be applied in settlement work in the following manner :

(1) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members, and

(2) Land may be owned individually, but jointly operated (*i.e.* Co-operative Joint Farming).

In organising the societies, the viability and mutual knowledge and confidence which strengthen the co-operative character should receive due weight. The broad outlines of these patterns are indicated below.

Pattern I : *Individual farming with the help of service co-operatives*

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It should be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the Society. The co-operative society caters to the needs of the members such as credit for agricultural production and supplies of agricultural requisites like fertilisers, improved seeds, insecticides etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land. The unit of land to be allotted to each settler will be 10 acres, and in the case of agricultural graduates, it may be 25 acres. The allottees will have the right to alienate their lands only after they pay back all the advances made to them by the Government. As the lands are not initially fit for cultivation and will entail expenditure on reclamation, the land revenue may be charged as follows :

Ist year	No land Revenue.
2nd year	1/3 of the assessed land revenue.
3rd pear	2/3 of the assessed land revenue.
4th year and onwards	Full land revenue.

It should be obligatory on the part of the allottee to cultivate the land himself or with the help of his family members.

Method of working. Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 25 per member. This amount will be repayable in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the members concerned as and when needed. The society, if desired by the members, may also provide domestic rquirements against their deposits.

One Agricultural Officer will supervise the .work of a group of 5 societies. He will assist each society in drawing up production plan, and all the agricultural operations should be carried out by the members in accordance with the programme. The society will supply fertilisers improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society, which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

Social amenities

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(*i*) *Homestead.* About 1/6th of an acre of land may be allotted as a homestead plot. The value of the plot is estimated at Rs. 75.

(*ii*) *House building.* A sum of Rs. 1,000 may be advanced to each family towards the cost of building a house.

(*iii*) *Provision of drinking water.* One drinking water well with a hand pump may be provided for 25 families. The cost of the two wells with pumps will be Rs. 6,000, and the average cost per family will come to Rs. 120.

(*iv*) *School.* For a colony of 50 families, a school may be provided. The Education Department of the State will provide funds for this purpose.

(*v*) *Dispensary.* Provision for a dispensary may be made for each colony. The Medical Department will provide funds for this purpose.

Reclamation charges. The average cost of reclaiming the land will be Rs. 300 per acre. Since the unit of allotment is 10 acres, the average cost will be Rs. 3,000 per family.

Follow-up cultivation charges. A sum of Rs. 1,000 will be required for meeting the cultivation charges on rainfed crops.

Rs. 1,000 may be provided per family for a pair of bullocks, cart, etc.

Maintenance expenditure. During the first few years when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. The schedule of payment for each family may be worked out on the basis of a means test. Provision for maintenance charges of Rs. 600 may be made for a period of one year.

Administrative set up. A sum of Rs. 50 (one Manager on Rs. 100 p.m. plus D.A. and one-fifth the pay of Agricultural Officer at Rs. 200 p.m. plus D.A. Approximately, Rs. 2,500 for each colony) will be spent per family towards the administrative set-up.

To sum up, the details of expenditure per family on the various items will be as under :—

	Rs.
(1) Value of land	1,500
(2) Social amenities	1,195
(3) Reclamation charges	3,000
(4) Follow-up cultivation	2,000
(5) Maintenance expenses	600
(6) Administrative set-up	50
TOTAL	8,345

Pattern of assistance. Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as follows :—

	Loan Rs.	Grant Rs.
I. *Individual members*		
(*a*) Share capital	25	—
(*b*) Homestead plot and house	1,075	—
TOTAL	1,100	—
III. *Through co-operative society*		
(*a*) Drinking water supply	—	120
(*b*) Reclamation charges	—	3,000
(*c*) Maintenance expenses	600.	—
(*d*) Follow-up cultivation		
(*i*) Bullocks and implements	1,000	—
(*ii*) Cultivation charges	1,000	—
(*e*) Administrative set-up	—	50
TOTAL	2,600	3,170

The loans for cultivation charges will be interest-free and recoverable one year after the harvest. The loans for bullocks, equipment, etc., should be recovered from the third year in 5 annual instalments with the rate of interest as for *taccavi* loans. The loans for the homestead plot and house building should be recovered from the 5th year in 15 annual instalments with the rate of interest as for *taccavi* loans. The occupancy price of land should be paid from the 6th year in 5 annual instalments.

Pattern II : Individually owned but jointly operated

The co-operative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land. The scale of allotment of land to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

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Method of working. The society will formulate the production plan through its elected Managing Committee. The Managing Committee may formulate the day-to-day working plan for the members either by forming some special groups or on an *ad hoc* basis. The means of cultivation, *i.e.*, seeds, fertilisers, implements, bullocks etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidy received from the Government towards the wages on labour, maintenance charges etc. would be availed of for this purpose. The crop would jointly be harvested and the income would be disbursed among the members after deducting the expenditure incurred by the society. The Agricultural Officer attached to a group of 5 societies will provide the necessary technical guidance with regard to the formulation of the production programme, the use of fertilisers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the society will keep the necessary accounts, etc.

The social amenities, reclamation charges, follow-up cultivation charges, maintenance expenditure and administrative set-up for the organisation of this scheme will be the same as in Pattern I.

This pattern will also facilitate undertaking of the follow-up cultivation.

Pattern of assistance. All the assistance, except loans for homestead and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

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L9F&A60—500—(Sec. I)— 20-5-61—GIPF.

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REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART IV—MYSORE

सत्यमेव जयते

WASTELANDS SURVEY AND RECLAMATION
COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
DECEMBER, 1960

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories :—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(*b*) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F./1024/Spl./59, dated the 11th June, 1959, (Appendix A) with the following terms of reference :—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the area to be allotted and the payments to be made by settlers' co-operative, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This

questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz.*, Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under :—

(*i*) forests,

(*ii*) barren and unculturable lands,

(*iii*) land put to non-agricultural uses,

(*iv*) permanent pastures and meadows,

(*v*) areas under miscellaneous trees and crops,

not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PART IV

MYSORE

PREFACE

The report deals with the availability and location of wastelands in large-sized blocks in Mysore and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands in the State, we undertook a tour of certain representative areas. It was, however, not possible to visit all the areas offered for reclamation, nor was this considered necessary.

3. During our visit to the State from the 19th to 26th June, 1960, we visited wastelands in the districts of Dharwar, Shimoga, Chitradurga, Tumkur, Mysore and Hassan. Some settlement schemes undertaken by the State Government in the districts of Dharwar, North Kanara and Chitradurga were also visited. A meeting with the Deputy Commissioners of Belgaum, Bijapur, North Kanara and Dharwar was held on the 19th June, 1960, to discuss the problem of utilisation of wastelands in the different districts. On the 27th June, 1960, the Committee had detailed discussions with the Chief Secretary and other officers of the State Government. On the 2nd December, 1960, the draft report of the Committee relating to the State was discussed and finalised.

4. We wish to thank the officers of the State Government, who gave us the benefit of their views. We wish to express our gratitude to the Liaison Officers, Shri Syed Abdul Mannan and Shri B. S. Hanuman, for obtaining the necessary data required by the Committee and for arranging the tours. We are also thankful to Shri M. L. Subbanna, Joint Director of Agriculture, for assisting the Committee in collecting certain data and in furnishing much useful information.

5. We are highly indebted to Dr. S. P. Raychaudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities of the cartographic laboratory at the Institute in printing the maps included in the Report.

PART IV

MYSORE

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SECTION A

GENERAL ASPECTS

General aspects

The State of Jammu and Kashmir has an area of about 86,000 sq. miles and consists of nine districts, *viz.*, Anantnag, Baramulla, Srinagar, Ladakh, Kathua, Jammu, Udhampur, Doda and Poonch.

2. The population of the State is estimated at 44 millions, which gives an average density of fifty-one persons per sq. mile as compared to 287 persons for the country as a whole. The Jammu Sub-division is the most thickly populated, while the frontier areas in the north-east are very sparsely inhabited. The rural population forms 90 per cent of the total population.

3. Based on the physical features, the State can be broadly divided into three divisions, *viz.*, Leh, Kashmir Valley and Jammu. The Leh region which gradually slopes towards north to north-east has a dry temperate climate, and is devoid of vegetation. The Kashmir Valley is a moist, temperate region, while the Jammu region is partly sub-tropical and partly sub-temperate. The whole of the Jammu region is geographically quite distinct from the Kashmir Valley.

Climate

4. The climate of the State shows great diversity due to marked differences in the altitudes of the different regions, the elevations varying from 1,200 feet at Jammu to over 25,000 feet on the mountain peaks. The temperature in the Valley is considerably lower than that experienced at similar elevations on the outer Himalayas. At higher elevations, however, the winter is very severe. The temperature is lowest in January and highest in July.

4.1. The precipitation is confined to two periods, *viz.*, the cold season from December to April and the south-west monsoon period from June to September. There is little precipitation in October and November, the latter being the driest month in the year. The cold season precipitation from December to March is chiefly due to disturbances in Iran and Baluchistan, which give rise to very stormy weather in Kashmir. In April and May thunderstorms occur in the Valley, and these are very useful for agricultural operations. In Jammu heavy rainfall is received from July to September. Like the submontane districts of the Punjab, the south-west monsoon is a predominant feature of the Jammu region.

Soils

5. No detailed survey of the soils of Jammu and Kashmir has been carried out. The available data are summarised below.

5.1. Little information is available about the soils of Leh.

5.2. In the Kashmir Valley, the soils are clay loam to loam in texture. Their nitrogen content varies from 0.4 to 0.08 per cent, it being usually high in cultivated areas in or near forests. The nitrogen content of eroded lands known as the *kerawas* is low, whereas it varies between 0.2 and 0.1 per cent in paddy fields. In general, the soils in the Valley are well supplied with phosphorus and potash. The soils in Kashmir are mostly calcium soils with high magnesium content. In low-lying areas there is accumulation of iron and aluminium in B horizon, which gives the characteristic mottling. The pH varies from 6.5 to 7.2, except in areas near the forests where the soils are acidic. There are areas in the Sonowara region where the land remains waterlogged for about 9 months in the year.

5.3. The submontane tract and the foothills are found below Jammu. Here the soil is mostly alluvial as in the submontane districts of the Punjab. Above Jammu, the region is mountainous with small valleys here and there. The soils are loam to sandy loam in texture. The nitrogen content of these soils varies from 0.08 to 0.04 per cent. These soils are moderately supplied with phosphorus and potash. The pH is above 7. In paddy lands, alkalinity is developing rapidly, and white patches may be seen in most of the paddy fields.

6. The important crops grown in the different regions are as below :—

Region	Crops
Leh	Some millets.
Kashmir Valley	Paddy, maize, barley, wheat, millets (*Setaria italica* and *Panicum miliaceum*), rape, *til*, linseed, *Phaseolus radiatus*, *Phaseolus aconitifolius*, fruits, vegetables, saffron.
Jammu	Wheat, paddy, maize, barley, millets, fruits, vegetables, sugarcane, ginger, oilseeds, pulses.

Irrigation

7. In the Kashmir Valley agriculture is mainly dependent upon irrigation, which is abundant in normal years. In Jammu, irrigation from the Ravi and the Ujh is common in the hot, moist tracts. In the hilly areas perennial streams supply water for irrigation. The total irrigated area in the State during 1958-59 was 7,36,132 acres out of the total cropped area. of 18,80,303 acres, representing about 39 per cent of the cropped area. The main source of irrigation in the State is canals, covering an area of 7,02,932 acres out of the total irrigated area of 7,36,132 acres. The prinicipal crop grown under irrigation is rice with an area of 4,78,628 acres.

Natural vegetation, crops grown and yields obtained

8. The dry region of Leh is almost devoid of vegetation. In the rest of the State the forests are extensive and valuable. The area under forests is about 2,640 sq. miles, and deodar, fir and pine are quite common. Tree growth above 11,000 ft. consists of dwarf rhododendron and juniper.

9. The principal food crops are rice, maize, wheat, barley, millets and pulses. Potatoes and vegetables are grown both for consumption and for seed. A very large proportion of the requirements of the country in respect of the seed of vegetables of European type is met from the Kashmir Valley. Fruits are extensively cultivated and are an important source of revenue to the State. Saffron is cultivated on the plateaux of Pampur. Medicinal plants of economic importance are also grown.

10. Rice is the staple crop of the State, and occupied an area of 5,04,000 acres in 1958-59. Rice is sown broadcast and is also transplanted. The

annual production of rice is estimated at 2.3 lakh tons. Maize is next in importance to rice, with an area of 4.9 lakh acres. Its production was 1.88 lakh tons. The production of wheat was one lakh tons. The commercial crops are fruits, vegetable seeds and saffron, which together contribute substantially to the income of the farmers.

11. The average yields of important crops in the different districts are given in Appendix D.

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SECTION B

DESCRIPTION OF BLOCKS AND MEASURES FOR RECLAMATION

12. According to the land utilisation statistics for the year 1958-59, the total area of the State may be classified as under :—

	(Acres) (million)
(*i*) Forests	1·40
(*ii*) Land not available for cultivation—	
(*a*) barren and unculturable land	0·83
(*b*) land put to non-agricultural use	1·00
(*iii*) Other uncultivated land excluding fallows—	
(*a*) culturable waste	0·37
(*b*) permanent pastures and other grazing lands	0·35
(*c*) land under miscellaneous trees and groves	0·04
(*iv*) Current fallows	0·19
(*v*) Fallows other than current fallows	0·15
(*vi*) Net area sown	1·60
TOTAL	5·93

Note— The above figures exclude the occupied areas of the State.

13. The above statement shows that the total area under the head 'other uncultivated land excluding fallows' is 0.76 million acres, and the area classified as 'fallows other than current fallows' is 0.15 million acres. The district-wise distribution of the areas under each of the above heads is given in Appendix E.

14. Of the total area of 0.91 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", only 17 blocks comprising an area of 12,932 acres have been offered for reclamation in blocks of 250 acres or more in the districts of Kathua and Jammu. No blocks of wastelands of the requisite size are reported from the remaining 7 districts. When we enquired about the comparatively small area offered for reclamation, it was stated that the figures reported in the statement of land utilisation in para 12 could not be relied upon, and that most of the available wastelands were in scattered pieces and lying uncultivated due to a variety of reasons, such as unallotted evacuee property, flooding during the rainy season, and heavy infestation with weeds and grasses.

15. The distribution of wastelands in the two districts is given below :—

District	Block No.	Area (acres)
Kathua	1-4	1,946
Jammu	5-17	10,986

16. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

17. *Block* 1 comprising 554 acres is located in village Sial, in the Hiranagar tehsil of the Kathua district, and lies close to the cease-fire line with Pakistan. The communications are poor. The land is infested with bushes and small *babul* trees, and will have to be cleared with tractors. The soil is red. The rainfall is about 30 inches. At present no irrigation is available in the area, but after the proposed dam across the Ujh is constructed, the entire area between Lakhanpur and Samba, wherein this block is located, will be commanded by the dam.

18. *Block* 2 comprising 786 acres is located in villages Pansar and Gajnal, in the Hiranagar tehsil of the Kathua district. Other details are the same as for block 1.

19. *Block* 3 comprising 261 acres is situated in village Heria-chak, in the Hiranagar tehsil of the Kathua district, and lies close to the cease-fire line with Pakistan. The land has remained uncultivated since 1947. It is now infested with pernicious weeds, bushes and trees, and will have to be cleared with tractors. The area is subject to flooding. The soil is alluvium. The rainfall is about 30 inches. Irrigation facilities can be provided by means of *kuhls* from the *Ujh* nala.

20. *Block* 4 comprising an area of 345 acres is situated in villages Paharpur, Mada and Chakdewal, in the Hiranagar tehsil of the Kathua district. Other details are the same as for block 3.

21. *Blocks* 5-11 comprising 3,473 acres are located in the following villages, in the Akhnoor tehsil of the Jammu district :—

Block No.	Name of village
5	Bhalwal Bharath
6	Nagial
7	Sangram
8	Najwal
9	Chhani Thana
10	Bhalwal Bharath
11	Bhalwal Bharath

22. All these areas are located near the cease-fire line with Pakistan, and lie along the creeks of the rivers Chenab and Ujh. The communications are extremely poor. The land is subject to floods and erosion hazards, and hence any large-scale habitation in the area is precarious. The area is infested with thick growth of pernicious weeds, shrubs and bushes, and can be cleared only with the help of tractors. The soil is alluvium in most of the blocks, but patches of sandy soil are found here and there. The area receives a rainfall of about 40 inches. No irrigation is available.

23. *Block* 12 comprising 1,194 acres is located in village Lalyal, in the Jammu tehsil of the same district, and lies near the cease-fire line with Pakistan. It is cut off from the inhabited areas by a branch of the river Chenab. The land is infested with pernicious weeds, shrubs and bushes, and will have to be cleared with tractors. The area is subject to flooding and erosion by two branches of the Chenab. The soil is alluvium. The rainfall is about 40 inches, and is confined to the months of June and September. Irrigation is available from the Chenab Canals system.

24. *Blocks* 13-15 comprising 4,661 acres are located in villages Sohanjana, Kukrian and Bhangore respectively, in the Jammu tehsil of the

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same district. The area lies near the cease-fire line with Pakistan, and is subject to flooding and erosion by the rivers Tawi and Chenab. The land is infested with pernicious weeds, bushes and shrubs, and can be cleared with the help of tractors. The soil is alluvium. The rainfall is about 40 inches, and is received mostly during the months of June to September. No irrigation facilities exist in the blocks.

25. *Block* 16 comprising 325 acres is located near village Makwal, in the Jammu tehsil of the same district. The area is located along the cease-fire line with Pakistan, and is subject to erosion by the river Tawi which often changes its course. The land is infested with pernicious weeds and grasses and can be cleared with the help of tractors. The soil is alluvium. The rainfall is about 40 inches, and is confined mostly to the period June to September. No irrigation is available.

26. *Block* 17 comprising 1,333 acres is located near village Koulpur, in the Sambha tehsil of the Jammu district. The area is situated between two mighty streams Devak and Basantar, and is subject to heavy erosion. The land is infested with thick growth of pernicious weeds and grasses. The soil is sandy. The rainfall is about 30 inches. No irrigation is available.

27. To sum up, it may be stated that the entire wasteland areas found in the districts of Kathua and Jammu, except the areas included in blocks 1 and 2, are located along the creeks of the Chenab, Ujh, Tawi, Basantar and Devak, with the result that the areas remain flooded during the rainy season and any large-scale habitation becomes somewhat precarious. We were given to understand that certain plans had been prepared by the State Government for providing flood protection to these areas, but the execution of the schemes would depend upon the availability of funds during the Third Plan period. Like *bet* or riverain areas in the Punjab, these lands are generally covered with thick growth of pernicious weeds and grasses, such as *sarkanda, kharkana,* etc., and can be reclaimed only with tractors. The cost of clearance of weeds and bushes is estimated at about Rs. 75 per acre. Some of the areas are not easily accessible. Further, it is difficult to eradicate the pernicious weeds and grasses unless facilities for mechanical cultivation are made available. The areas are mostly located along the cease-fire line with Pakistan, and will attract settlers only if the Government sets up military pickets for the protection of the settlers and makes liberal grants for their housing and for agricultural requisites, such as bullocks, implements, etc. There are at present hardly any irrigation facilities in the blocks, but shallow, open wells can be dug at moderate cost as the water-table is quite high.

SECTION C

DISPOSAL OF RECLAIMED LANDS FOR CULTIVATION

Nature of ownership of wastelands and their disposal for cultivation.

28. In this Section, we deal with the various measures needed for the disposal and development of wastelands which have been located in the State. The measures required for the purpose would primarily depend upon the nature of ownership of wastelands. In the State of Jammu & Kashmir, the wastelands are owned by the following :—

(*i*) Private individuals,
(*ii*) Government, and
(*iii*) the Custodian of Evacuee Property.

29. A statement showing the break-down of wastelands according to their ownership is given in Appendix G. It would be observed from the statement that, of the total area of wastelands located for reclamation, about 42 per cent belongs to the Government and 46 per cent to private individuals. Only a very small percentage of the wastelands belongs to the Custodian of Evacuee Property. The problems involved in the disposal of wastelands belonging to private individuals, the Government and the Custodian of Evacuee Property are discussed below.

30. *Private lands.* The problems involved in the development of wastelands included in blocks 3 to 17 have been discussed in detail in the previous section. As explained therein, the wastelands can be made fit for cultivation by the adoption of the following measures :—

(*a*) flood protection,
(*b*) clearance of weeds,
(*c*) arrangements for adequate security, and
(*c*) provision of irrigation.

31. The main problem of the areas where the wastelands are located, is that they are subject to floods during the rainy season. No flood control schemes are in operations, and unless the hazards from the annual floods are reduced, there is little purpose in reclaiming the lands. Even after the flood protection measures have been taken and the areas are cleared of weeds, it would still be necessary to arrange for mechanical cultivation of the reclaimed lands in order to eradicate pernicious weeds and grasses with which they are infested. Ordinarily it would not be within the reach of a cultivator to own a tractor, and the State Government would have to set up tractor stations to be managed departmentally or by private tractor companies. The construction of shallow wells can also be undertaken by the grant of subsidy and loans to the cultivators so as to augment irrigation facilities. Further, since the lands are located along the cease-fire line with Pakistan, security arrangements will have to be made by setting up military pickets.

32. In view of the difficulties mentioned above, and the heavy cost involved in undertaking the various reclamation measures, we feel that it would be beyond the capacity of individual cultivators to bring the lands

under successful cultivation. It was suggested to us that the State Government might take temporary possession of such lands with a view to reclaiming and cultivating them during the first three or four years, after which these lands could be handed over to their respective owners. While this suggestion has certain merits, it is doubtful if the State Government will find it convenient to spare large funds for this purpose, apart from the consideration that the cost of reclamation and the flood control measures will be heavy.

33. *Government and Evacuee lands.* As regards the wastelands included in blocks 3 to 17 belonging to Government or the Custodian of Evacuee Property, the problems involved in their development are similar to those explained above.

34. In view of the above considerations, we feel that there is no urgency about the reclamation of these wastelands, and that the matter may be taken up when flood protection measures have been adopted, and the situation along the Indo-Pakistan border has somewhat eased. In the meantime the State Forest Department may take steps to establish small woodlots in the wastelands under the Farm Forestry. Schemes sanctioned in the Third Plan. These woodlots will serve to protect the wastelands from further erosion, and will augment the supplies of firewood in the State.

35. The position in respect of wastelands included in blocks 1 and 2 is, however, different as these areas are not subject to flooding. We recommend that, subject to security arrangements being made by the military authorities along the border with Pakistan, the following steps should be taken to reclaim the wastelands and bring them under cultivation so as to attract cultivators to settle on these lands :—

(*i*) Land reclamation charges should be borne by the State Government, and

(*ii*) suitable subsidy should be given for sinking wells, for the purchase of bullocks, implements, seeds, etc., and for building houses for residential purpose.

36. If irrigation facilities are provided, the wastelands in blocks 1 and 2 can be made productive. It is estimated that the average yield from these lands will be about 8 maunds valued at Rs. 96. As the cost of reclamation will be about Rs. 80 per acre, the value of production will cover the expenditure on reclamation in one crop season.

Priority between different reclaimable lands.

37. We recommend that the area of 1,340 acres included in blocks 1 and 2 may be taken up for reclamation. As regards the remaining blocks, we do not suggest any action for the present as their reclamation will not be profitable until steps are taken to eliminate the hazards from annual floods and the situation along the Indo-Pakistan border has sufficiently eased to attract cultivators to settle on these lands.

SECTION D

SUMMARY OF GENERAL CONCLUSIONS AND RECOMMENDATIONS

1. Of the total area of 0.91 million acres under the heads "other uncultivated land excluding fallows" and "fallows other than current fallows", only seventeen blocks comprising an area of 12,932 acres have been offered for reclamation in blocks of 250 acres or more in the districts of Kathua and Jammu. No blocks of wastelands of the requisite size have been reported from the remaining seven districts. The area offered for reclamation is relatively small as compared with the figures reported in the revenue records. It was explained that the revenue figures could not be relied upon and that most of the available wastelands were in scattered patches.

(*Paragraph* 14)

2. The distribution of wastelands in the two districts is given below :—

District	*Area*
Kathua	1,946
Jammu	10,986
TOTAL	12,932

(*Paragraph* 15)

3. The wastelands located for reclamation in the districts of Kathua and Jammu except blocks 1 and 2 are mostly located along the creeks of the Chenab, Ujh, Tawi, Basantar and Devak, with the result that the areas remain flooded during the rainy season and any large scale habitation becomes somewhat precarious. These lands are generally covered with thick growth of pernicious weeds and grasses such as *sarkanda, kharkana,* etc., and can be reclaimed with tractors. The cost of clearance of weeds and bushes is estimated at about Rs. 75 per acre.

(*Paragraph* 27)

4. Some of the areas offered for reclamation are not easily accessible. Further, it is difficult to eradicate the pernicious weeds and grasses unless facilities for mechanical cultivation are made available. The areas are mostly located along the cease-fire line with Pakistan, and will attract settlers only if the Government sets up military pickets for the protection of settlers and makes liberal grants for their housing and for agricultural requisites, such as bullocks, implements, etc. There are at present hardly any irrigation facilities in the blocks, but shallow, open wells can be dug at moderate costs as the water-table is quite high.

(*Paragraph* 27)

5. The wastelands in the State are owned either by private individuals, the Government, or the Custodian of Evacuee Property. Of the total area of wastelands located for reclamation, abut 42 per cent belongs to Government and 46 per cent to private individuals. Only a very small percentage of wastelands belongs to the Custodian of Evacuee Property.

(*Paragraph* 29)

6. In order to make the wastelands included in blocks 3—17 fit for cultivation, the following measures need to be adopted :—

(*a*) flood protection,

(*b*) clearance of weeds,

(*c*) arrangements for adequate security, and

(*d*) provision of irrigation.

Heavy cost is involved in undertaking the various reclamation measures and it would be beyond the capacity of individual cultivators to bring the areas under successful cultivation. The Government may also not find it convenient to spare large funds for this purpose.

(*Paragraphs* 30, 31 *and* 32)

7. The area of 1,340 acres included in blocks 1 and 2 may be taken up for reclamation. As regards the remaining blocks, their reclamation will not be profitable unless steps are taken to eliminate the hazards from annual floods and the situation along the Indo-Pakistan border has sufficiently eased to attract cultivators to settle in these lands. In the meantime, the State Forest Department may take steps to establish small woodlots in the wastelands under the Farm Forestry Schemes sanctioned in the Third Plan. These woodlots will serve to protect the wastelands from further erosion, and will augment the supplies of firewood in the State.

(*Paragraphs* 34 *and* 35)

8. To bring the wastelands included in blocks 1 and 2 under cultivation, the following steps should be taken :—

(*i*) Land reclamation charges should be borne by the State Government, and

(*ii*) suitable subsidy should be given for sinking wells, for the purchase of bullocks, implements, seed, etc., and for building houses for residential purpose.

In addition, security arrangements should be made by the military authorities along the border with Pakistan.

(*Paragraph* 35)

9. The average yield, after reclamation, from wastelands included in blocks 1 and 2 will be about 8 maunds per acre valued at Rs. 96. As the cost of reclamation will be about Rs. 80 per acre, the value of production will cover the expenditure on reclamation in one crop season.

(*Paragraph* 36)

Sd/-

(B. N. Uppal)
Chairman

Members
1. Sd/- (J. P. Mital)
2. Sd/- (F. C. Gera)

Co-opted members
1. Sd/- S. M. Agha,
   Development Commissioner
2. Sd/- Ghulam Nabi,
   Revenue Secretary
   subject to comments communicated separately
3. Sd/- P. N. Kaul,
   *Agriculture Secretary
4. Sd/- Dwarka Nath,
   Forest Secretary
5. Sd/- B.N. Nengi,
   Chief Engineer (Irrigation)

Sd/-

(A.S. Venu Gopalan)
Secretary

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*At the time of signing the report, the Agri. Secetary, Government of Jammu & Kashmir, communicated to the committee some comments on the report, which are given in Appendix H of the report.

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Appendices

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
SECRETARY.

No. F. 1024/*SPL*/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE

(*Department of Agriculture*)

New Delhi, June 11, 1959.

My dear

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be over-emphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories :

(*a*) lands which are really adjuncts of village abadis and are meant to serve as pastures and fuel forests or sites for the extension of the abadis; and

(*b*) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production

and the employment and income that would become available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committee will consist of the following :—

1.	Dr. B. N. Uppal, Agricultural Commissioner, Government of India	Chairman
2.	*Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India	Member
3.	Shri F. C. Gera, Chairman, Central Tractor Organisation	Member
4.	Shri J.P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	Member

In addition, the Committee will co-opt in individual States the following officers :—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly senior officer who could be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours Sincerely

Sd./- K. R. Damle

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd Feb., 1960 *vide* Memo No. 12-1/59-GMF(Co), dated the 3rd February, 1960 (copy enclosed).

No. F. 12-1/59-*GMF(CO).*

GOVERNMENT OF INDIA

MINISTRY OF FOOD & AGRICULTURE

(Department of Agriculture)

New Delhi the 3rd February, 1960.

Subject :—Reclamation of culturable wastelands in the country—Setting up of a Committee.

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the membership of the Committee as mentioned in D. O. No. F. 1024/SPL./59, dated the 11th June, 1959, referred to therein :—

> "Shri M. S. V. Rama Rao,
> Senior Director of Soil Conservation,
> Government of India,
> in place of Dr. J. K. Basu since retired."

Sd./- V. BALASUBRAMANIAN
Under Secretary.

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APPENDIX 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee

1. What is the total area of culturable wasteland in your State? (Culturable wasteland is defined as under :—

   All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows?

   (Current fallows are defined as those lands which remain fallow for the current year only.

   Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :

DISTRICT :

Details in respect of Block No.——————————————*consisting of* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?

11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the Colonization operations in the block successfully ?

12. If so, what would be the likely cost of acquisition ?

13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted ?

14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.

15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors ? If the former, is adequate labour locally available ?

16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded ? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.

17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block ?

18. What is the type of soil in the block ? (alluviums, black, red or lateritic).

19. Is the land flat or gently sloping or steep ? What is the depth of the soil ?

20. What crops are grown in the area round about the block ?

21. What is the yield per acre of each crop ?

22. What is the nearest marketing centre for these crops ?

23. What is the extent and distribution of rainfall in the area ?

24. Can irrigation facilities be made available for the block ? If so, what kind of facilities ?

25. Whether these irrigation facilities will be perennial or non-perennial ?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year Plan will cover this land ?

27. What is the depth of sub-soil water ? Is water sweet or brackish ?

28. Are anti-malarial operations necessary in the area for successful colonization ?

29. Is any endemic disease prevalent in the area ? If so, do the State Government contemplates any measures to combat this disease ?

30. Is drinking water available in the block ?

31. Are there any drinking water wells in use ?

32. Is the area subject to depredations of wild animals ? If so, what animals ?

33. Is the Block likely to attract settlers from distant places in the State or from other States ?

34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block ?

35. Do you think educated unemployed could be successfully settled in the block ?

36. What should be the unit of allotment per settler ?

37. Would you suggest that the settlers should put up their homesteads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi ?*

38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on cooperative basis).

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39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX 'C'

Dr. B. N. Uppal,
Chairman, Wastelands Survey
and Reclamation Committee.

D.O. No. F. */59-WLS&RC*

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(*Department of Agriculture*)
'Krishi Bhavan', New Delhi.

January 2, 1960
Paus 12, 1881.

Dear Shri

Kindly refer to my letter of even number dated the 10th August, 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate block of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch

of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,
B. N. Uppal
Sd./-

All Liaison Officers
in the States and Union Territories.

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APPENDIX D

Statement showing yield (in lbs.) per acre of principal crops in Jammu & Kashmir (district-wise), 1957-58

District	Rice	Maize	Wheat	Barley	Small Millets	Rape & Mustard	Linseed
Anantnag	1,097	658	659	579	651	460	640
Baramulla	1,097	658	658	576	649	—	196
Doda	878	658	576	576	601	494	—
Jammu	877	658	576	576	646	164	164
Kathua	879	658	576	571	653	264	164
Ladakh	—	658	658	576	650	411	—
Poonch	868	658	576	576	640	1,084	400
Srinagar	1,097	658	493	575	659	658	658
Udhampur	899	658	494	576	650	504	373
STATE	1,027	658	576	576	642	482	504

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APPENDIX E

Land utilisation statistics for Jammu & Kashmir for the year 1958-59 (*district-wise*)

District	Total geographical area	Forests	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
	By village papers		Barren and unculturable land	Land put to non-agricultural uses	Culturable waste	Permanent pastures and other grazing lands	Miscellaneous tree crops & groves			
Anantnag	543,722	588	71,462	38,252	11,761	61,480	13,849	21,747	14,025	310,558
Baramulla	517,898	556	173	117,164	42,113	64,628	2,093	24,100	3,133	263,938
Srinagar	315,598	2,060	33,876	41,150	5,972	12,453	7,733	1,005	43,204	168,145
Ladakh	136,577	158	57,066	13,817	11,118	—	3,807	1,022	10,837	38,752
Jammu	794,122	38,163	219,151	115,503	71,548	11,813	5,448	65,777	4,169	262,550
Udhampur	1,060,037	379,956	112,925	287,332	47,551	45,988	11,255	45,287	3,836	125,907
Kathua	654,360	171,679	146,350	54,883	89,418	21,495	1,211	3,309	3,352	162,663
Doda	1,043,782	560,027	146,986	101,950	31,259	10,257	133	8,539	52,472	132,159
Poonch	860,621	242,859	45,223	227,773	63,820	122,108	—	14,584	12,177	132,077
TOTAL STATE	5,926,717	1,396,046	833,212	997,824	374,560	350,222	45,529	185,370	147,205	1,596,749

Note.—This statement excludes figures for the Pakistan occupied portion of the State.

APPENDIX F

Statement showing details of blocks offered for reclamation in Jammu & Kashmir

District	Name of block	Block No.	Nearest railway station	Accessible by fair/all weather road	Whether included in C.D. Block	Area (acres)	Amount of rainfall (inches)	Nature and depth of sub-soil water (feet)	Endemic diseases
Kathua	Sihal, Chchawala and Mangoochock	1	Pathankot	Fair weather	No	554	30	10, sweet	No
	Thagu Rathna, Pansar, Gajnal and Maniyan	2	Pathankot	Fair weather	No	786	30	10, sweet	No
	Chak Heria	3	Pathankot	Fair weather	Yes	261	30	15, sweet	No
	Paharpur, Chak Bala & Mada	4	Pathankot	Fair weather	Yes	345	30	15, sweet	No
Jammu	Bhalwal Bharat	5	Pathankot	No road	Yes	1,291	40	8, sweet	No
	Nagial	6	Pathankot	Fair weather	No	412	40	30, sweet	No
	Sangram	7	Pathankot	All weather	No	256	40	100, sweet	No
	Najwal	8	Pathankot	No road	No	428	40	25, sweet	No
	Chhani Thana	9	Pathankot	No road	No	387	40	25, sweet	No
	Bhalwal Bharat	10	Pathankot	No road	No	388	40	25, sweet	No
	Bhalwal Bharat	11	Pathankot	No road	No	311	40	25, sweet	No
	Lalyal	12	Madhopur	No road	Yes	1,194	40	10, sweet	No
	Sohanjna	13	Madhopur	No road	Yes	1,064	40	8, sweet	No
	Kukrian	14	Madhopur	No road	Yes	1,211	40	10, sweet	No
	Bhangore	15	Madhopur	No road	Yes	2,386	40	8, sweet	No
	Makhwal & Murarpur	16	Pathankot	No road	No	325	40	9, sweet	No
	Kaulpur	17	Pathankot	No road	Yes	1,333	30	18, sweet	No

APPENDIX G

Statement showing the ownership of the areas offered for reclamation

District	Block No.	Area of block	Area belonging to Private individuals	Area belonging to Government	Area belonging to Custodian of Evacuee Property
Kathua	1	554	133	421	—
	2	786	121	509	156
	3	261	—	261	—
	4	345	203	100	42
Jammu	5	1,291	655	636	—
	6	412	319	31	62
	7	256	136	26	94
	8	428	283	145	—
	9	387	341	46	—
	10	388	199	189	—
	11	311	192	119	—
	12	1,194	266	928	—
	13	1,064	330	734	—
	14	1,211	694	517	—
	15	2,386	1,765	621	—
	16	325	325	—	—
	17	1,333	—	95	1,238
TOTAL		12,932	5,962	5,378	1,592

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APPENDIX H

The report is returned herewith with the following remarks :

1. The figures indicated on page 5 appear having been copied from the "Digest of statistics Jammu & Kashmir—1958-59".

2. The report on page 6 does not indicate the Ministry, Deptt.; the Agency or the authority which may have offered two blocks for purposes of reclamation out of the 17 blocks mentioned therein. The offer might have been made to the Chairman of the Committee by the Revenue Department.

3. The report on page 6 shows that the Chairman of the Committee has been told that the figures shown on page 5 of the report could not be relied upon.

4. The area of the two blocks said to have been offered is indicated as 1,340 acres.

5. There is "Border Area Land Reclamation Unit—Jammu" in existence in this State. Earlier it was named as "Jammu Tractor Organisation Unit" and was created in the beginning of the last decade when it was placed in the portfolio of the Ministry of Revenue—under the control of the then Director General, Food and Supplies, Jammu. Later on, it was placed under the control of the then Inspector General of Police. In 1954 or so, this organisation was wound up and re-created in 1955 under the name "Border Area Land Reclamation Unit—Jammu" and was placed under the control of the then Development Adviser in portfolio of Ministry of Revenue. This year it has been transferred from the Revenue to the Agriculture Deptt. and a scheme has in this connection been drawn up and has been forwarded by the Director of Agriculture to the Secretary to Government, Agriculture Department for obtaining the sanction of the Government.

   2. The functions of the Unit as detailed in the Scheme will be to reclaim waste lands whether owned by the State Government or by farmers. It has been estimated that the area available for reclamation by this Unit will be much more than 1,340 acres, and whatever subsidy will become available in effect of the report "Location and Utilisation of Wasteland in India" could be credited to the scheme.

6. As regards the sinking of wells, the Irrigation Department may draw a detailed Scheme and after vetting by the concerned quarters of this State Government it may be forwarded to the Ministry of Food and Agriculture for sanction and provision of subsidy whatever allottable.

7. The Ravines, Nallas and Rivers coming down from the Hills located close to and in the North-East of the Jammu-Kathua Road are widening year after year with the result that allot of the Land which was on both sides of the Road under cultivation earlier, has been

covered there under and the process of spread of those Ravines, Nallas and Rivers is in progress. In case these Ravines, Nallas and Rivers are not trained immediately, lot of more fertile land at present under cultivation below the road side may become wasteland in a few years time which will be difficult to be reclaimed later on.

2. Therefore, this problem requires immediate attention and the Flood Control Department or the irrigation department, as the case may be, may draw Nalla and River-wise Schemes.

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REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART IX—JAMMU & KASHMIR

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WASTELANDS SURVEY AND RECLAMATION
COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
NOVEMBER, 1961

questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz.*, Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is ninefold as under :—

(*i*) forests,

(*ii*) barren and unculturable lands,

(*iii*) land put to non-agricultural uses,

(*iv*) permanent pastures and meadows,

(*v*) areas under miscellaneous trees and crops,

(*vi*) culturable waste,
(*vii*) current fallows,
(*viii*) fallows other than current fallows, and
(*ix*) net area sown.

The lands classified under categories (*iv*), (*v*) and (*vi*) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2-5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to

locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories :—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(*b*) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl./59, dated the 11th June, 1959, (Appendix A) with the following terms of reference :—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft, questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This

PREFACE

The report deals with the availability of wastelands in large-sized blocks in Jammu & Kashmir and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands in the State, we undertook tours of certain representative areas on the 22nd and 23rd January, 1961. On the 22nd January, 1961, wastelands in the district of Kathua were visited, while on the next day, the lands in the Jammu district were inspected. On the 24th January, 1961, the Committee had discussions with the officials of the State Government on the problems of reclamation. The draft report of the Committee relating to the State was discussed with the members on the 28th March, 1961, and then circulated to the co-opted members from the State. The report was later finalised.

3. We wish to express our gratitude to the officials of the Jammu & Kashmir Government, who gave us the benefit of their views. We are grateful to the Liaison Officer, Shri M. M. Siddiqi, Financial Commissioner, for obtaining the necessary data and arranging the tours of the Committee. We also thank the Assistant Commissioner, Kathua, and the District Collector, Jammu, for accompanying us during our tours of the areas.

4. We are highly indebted to Dr. S. P. Raychoudhury, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State.

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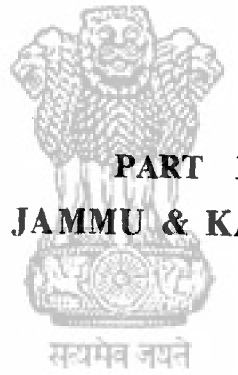
PART IX

JAMMU & KASHMIR



SECTION A

(General aspects)

General aspects

The State of Andhra Pradesh consists of 20 districts, viz., Anantapur, Chittoor, Cuddappah, East Godavari, Guntur, Krishna, Kurnool, Nellore, Srikakulam, Visakhapatnam, West Godavari, Adilabad, Hyderabad, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad, and Warangal. The State has 26,450 villages. The total geographical area of the State is 1,06,450 sq.miles, which is about 8.4 per cent of the total area of the country.

2. The population of Andhra Pradesh, according to the 1951 census, is about 3.13 crores, which gives a density of 295 persons per sq. mile, as compared to 287 persons for the country as a whole. Of the total population, 67.3 per cent is engaged in agricultural pursuits. The rural population is 82.6 per cent of the total population.

3. The State of Andhra Pradesh can be broadly divided into three physical divisions as below:—

(i) The mountainous region comprising the Nallamalai and Erramalai hills of Rayalaseema and the Eastern Ghats;

(ii) the plateaus or elevated plains comprising Telengana and the Rayalaseema districts; and

(iii) the deltas of the rivers and the sea-coast.

4. The major rivers of the State are the Godavari, the Krishna and the Pennar, which flow through the Deccan plateau in deep, well-defined valleys. After they emerge from the uplands, the rivers flow through their deltas between the embankments, with flood levels higher than the surrounding areas.

Climate

5. The climate of the State is hot and humid, except on the western plateau where the humidity is not high. The annual rainfall in the northern region is 45 to 50 inches, but decreases towards the south-west where it is 20 inches only. The State receives both the south-west and the north-east monsoons, but most of the rainfall is derived from the south-west monsoon. The rainfall is, however, variable and not well-distributed. The maximum summer temperature is 120°F, and the minimum temperature in the cold season is 66°F. The State can be divided into four climate zones based on the amount of annual precipitation as follows: (i) deltaic zone; (ii) coastal plains; (iii) Eastern Ghats; and (iv) plateau.

5.1. The deltaic zone mainly comprises the deltas of the Krishna and Godavari rivers. The annual rainfall varies from 35 to 40 inches. The mean temperature is 80°F in the Godavari river delta and 85°F in the Krishna river delta. The maximum temperature is experienced in the month of May.

5.2. In the coastal plains the rainfall decreases and the temperature increases as one travels from north to south. For example, in the Srikakulam district, the rainfall varies from 42 to 45 inches in the north, but comes down to 30 to 35 inches along the border of the Madras State in the south.

5.3. The zone comprising the Eastern Ghats is broken up into independent divisions by the uplands of the Krishna and the Godavari. The summer is mild, and there are dew and fog in the cold season.

5.4. The climate of Telengana, which comprises the plateau region, is agreeable for the greater part of the year. The rainy season lasts from June to September, the cold season from October to February, and the hot weather from March to the end of May.

Soils

6. The soils of Andhra Pradesh can be classified into black soils, red soils and alluvial soils. There are patches of lateritic soils in the districts of Nellore and East Godavari (*vide* Map 1).

6.1. Black soils form an extensive belt in the State, and some of the best agricultural lands have these soils. They may be either deep like the black cotton soils ('regur' soils), extending in depth up to 9 feet or more, or shallow with a depth of 3 to 4 feet at the most. These soils are heavy (80 per cent of fine fractions), have a high base status, and are consequently fertile. They are poor in organic matter owing to their formation under semi-arid conditions, but contain sufficient quantities of potash and phosphoric acid. They are rich in lime. They are suitable for the cultivation of cotton, millets and oilseeds. Under irrigated conditions, bumper crops of paddy and sugar-cane can be grown in these soils. Black soils are mainly found in the districts of Guntur, Kurnool, Cuddapah, Anantapur, Khammam, Adilabad, and in parts of Mahbubnagar and Nizamabad.

6.2. Red soils also occupy large areas in the State, and occur in all districts, but are concentrated in the districts of Chittoor, Cuddapah, Anantapur, Nellore, Hyderabad, Medak, Warangal, Karimnagar, Visakhapatnam and Srikakulam. They are comparatively more open in consistency, light in texture being loamy to sandy, and easily drained. They are deficient in organic matter, poor in plant nutrients, and have pH of 6.5 to 8. In the coastal belt the red soils are quite deep, but they are shallow in the drier regions of the inland plateau. Finely pulverised red soils known as *chalka* soils are found in Telengana. Mainly dry or rainfed crops are grown in red soils and the crop yields are low.

6.3. The alluvial soils are found along the sea-coast or in the deltas of the rivers. In the case of the coastal alluviums, the soils are sandy and are poor in their water-holding capacity. They are deficient in plant nutrients. Casuarina trees are extensively grown in this belt. In some places, the soils are salt-affected. The river alluviums, however, are fertile soils with a high content of fine fraction (60 to 70 per cent). A section of the profile shows alternate layers of sand and silt. The composition of these soils varies with the nature of the salts brought down by the rivers from their catchment areas. Accordingly, the Godavari alluviums are different from those of the Krishna. As the Godavari flows through a country of trap rock, its waters carry fertile mud, which is comparatively rich in CaO, P_2O_5 and K_2O. These soils produce bumper crops.

7. The important crops grown in the different soil zones are as below:—

Soil Zone	Crops
Black soils	Paddy, jowar, bajra, minor millets, pulses, groundnut, sesamum, sugarcane, tobacco, cotton, chillies, turmeric.
Red soils	Paddy, millets, ragi, pulses, castor, custard apple.
Alluvial soils	Paddy, sugarcane, cocoanut, bananas, vegetables.

Irrigation

8. The total irrigated area in the State in the year 1957-58 was 67,60,729 acres, out of the total cropped area of 2,96,57,257 acres, representing about 23 per cent of the cropped area. The main sources of irrigation in the State are canals and tanks, covering about 45 per cent and 41 per cent respectively, of the net irrigated area. Wells account for 11 per cent of the irrigated area, and other sources about 3 per cent. The main crop under irrigation is rice, which covers 64,97,318 acres out of the total irrigated area of 67,60,729 acres.

Natural vegetation, crops grown and yields obtained

9. The forest belts of the State lie in the north, north-east and south. Several species of timber grow in these forests.

9.1. The northern belt comprises tropical, dry, deciduous forests. Teak flourishes in this belt. The other valuable timber trees are rosewood, *Harwickia binata, Diospyros melanoxylon,* etc. Bomboo and cane are found in these forests.

9.2. The forests in the north-eastern belt are of two types, viz. tropical dry deciduous forests and tidal forests. The former have a wide diversity of flora, but they are of low growths. Teak is rare in these forests. The littoral forests possess littoral species which are known as mangrove.

9.3. The south-eastern belt comprises forests which are either dry deciduous or evergreen. The dry, deciduous forests contain the valuable timber tree known as Red Sanders (*Pterocarpus santalinus*). The evergreen forests are found between the hills and the coast.

10. The principal food crops of the State are rice, *ragi,* jowar, bajra, minor millets, red gram, green gram, and black gram. Of the cash crops, the important ones are sugarcane, tobacco, cotton, castor, groundnut, sesamum, turmeric, chillies and cocoanuts. Fruits, bananas and vegetables are commonly grown. Custard apple grows wild particularly in Telengana.

11. Rice is the staple crop of the State, and occupied 6.9 million acres in 1957-58. It is mainly grown in the rich deltaic lands under river irrigation systems, and in the interior districts under well or tank irrigation. In many places two paddy crops are raised in a year. The annual production of rice is estimated at 3.3 million tons. Millets are cultivated under rainfed conditions. The total production of millets during 1957-58 was 1.8 million tons, and of ragi 0.35 million tons. The annual production of Virginia tobacco constitutes 98 per cent of the total production in the country. The State accounts for more than one-fourth of the country's total production of chillies. Turmeric is an important spice crop, the annual production being 47,000 tons. Castor is a valuable oilseed crop, and contributes more than 50 per cent to the all-India production, the annual figure being 32,000 tons. Sugarcane is an important wetland crop, and the yield of 150 tons of cane per acre, which is a record for the country, has been obtained. The annual production of cocoanut is estimated at 315 million nuts, and of cotton at 1.27 lakh bales.

12. The average yields of important crops grown in the different districts are tabulated in Appendix D.

सत्यमेव जयते

SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

13. In the State of Andhra Pradesh, the total geographical area of 67.62 million acres is classified as under:—

	Acres (million)
1. Forests	14·58
2. Land not available for cultivation—	
(*a*) Barren and unculturable land	6·50
(*b*) Land put to non-agricultural use	3·86
3. Other uncultivated land excluding fallows—	
(*a*) Culturable waste	4·58
(*b*) Permanent pastures and other grazing lands	3·04
(*c*) Land under miscellaneous tree crops and groves	0·69
4. Current fallows	4·96
5. Fallows other than current fallows	2·19
6. Net area sown	27·22
Total	67·62

14. It will be observed that the total area under the head "other uncultivated lands excluding fallows" is 8.31 million acres, and the area classified as "fallows other than current fallows" is 2.19 million acres. The district-wise distribution of the areas under each of these heads is indicated in Appendix E.

15. Of the total area of 10.50 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", an area of 1.89 lakh acres has been offered for reclamation in blocks of 250 acres or more. On an enquiry about the reasons for the relatively small area located for reclamation, it was stated that the figures as reported in the village records should be discounted, and that, of the actual area under culturable waste, the bulk of it would be found in small bits scattered all over the State. It was also reported to us that the allotment of wastelands to the members of the Scheduled Castes and the Scheduled Tribes, etc., had been going on for some time past, and that large areas of wastelands had been disposed of in this manner. We would, however, suggest that a detailed survey of wastelands available in the State in smaller-sized blocks should be carried out as recommended in the introductory chapter.

16. Broadly speaking, the wastelands offered for reclamation in the State can be divided into the following three categories:—

I—Areas infested with thick growth of jungle, shrubs and bushes;

II—Saline lands; and

III—Dry lands.

17. The distribution of wastelands in categories I, II and III in the different districts is given below:—

District	Area available in category (acres)			Total (acres)
	I	II	III	
East Godavari	4,223	500	—	4,723
West Godavari	7,750	—	—	7,750
Visakhapatnam	1,075	—	—	1,075
Srikakulam	293	—	—	293
Nizamabad	1,216	—	—	1,216
Medak	431	—	—	431
Guntur	—	9,505	—	9,505
Krishna	—	27,600	—	27,600
Cuddappah	—	—	5,755	5,755
Nellore	—		43,932	43,932
Hyderabad	—	—	6,710	6,710
Karimnagar	—	—	10,227	10,227
Anantapur	—	—	1,455	1,455
Chittoor	—	—	633	633
Khammam	—	—	890	890
Nalgonda	—	—	3,386	3,386
Mehboobnagar	—	—	6,739	6,739
Kurnool	—	—	56,614	56,614
Total ..	14,988	37,605	1,36,341	1,88,934

18. Map II shows the location of blocks of wastelands in categories I, II and III.

Details of blocks in different categories

Category I

19. Twenty-six blocks comprising a total area of 14,988 acres have been located for reclamation in this category as per details given below:—

District	Block No.	Area (acres)
East Godavari	1—6	4,223
West Godavari	7—18	7,750
Visakhapatnam	19—21	1,075
Srikakulam	22	293
Nizamabad	23—25	1,216
Medak	26	431

20. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

21. *Blocks* 1—6. These blocks measuring 4,223 acres are situated in the Yellavaram taluk of the East Godavari district. The lands are over-grown with thick jungle, shrubs and bushes, and can be cleared with the help of tractors. The soil is mixed red and black. The area receives a rainfall of 40—45 inches. In view of the adequate rainfall in the area, it may be possible to construct small tanks at suitable places for irrigating the blocks. The cost of reclamation is likely to be high.

22. *Block* 7 comprising 5,000 acres is located near village Kalavapudi, in the Bhimavaram taluk of the West Godavari district. This was formerly a reserve forest area which has now been handed over to the Revenue Department for allotment to political sufferers and landless labourers. The land is infested with shrubs and bushes and can be reclaimed with the help of manual labour. The area is subject to inundation from the Upputeru drain. In order to bring the land under cultivation, high flood banks will have to be raised on either side of the drain in addition to the clearance of bushes and shrubs. The land is flat and the soil is black. The area receives a rainfall of about 45 inches. Two schemes for providing irrigation to the area have already been sanctioned, and the work is likely to be completed before the end of the Second Plan period. The cost of reclamation is likely to be high.

23. *Blocks* 8—18 comprising 2,750 acres are located in the Chintalapudi taluk of the West Godavari district. The area is infested with thick growth of jungle, shrubs and bushes. The soil is mostly red and lateritic, and is rocky at places. The area receives a rainfall of about 40 inches. The water-table is fairly high, and irrigation can be provided by the construction of wells. The cost of reclamation is estimated at Rs. 300 per acre.

24. *Block* 19 comprising 317 acres is located in village Polipalli, in the Visakhapatnam district. The area is infested with weeds, shrubs and bushes. The soil is red. The area receives a rainfall of about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200 per acre.

25. *Blocks* 20—21 measuring 758 acres are located in the Anakapalli taluk of the Visakhapatnam district. The area is infested with jungle, shrubs and bushes which can be cleared with the help of tractors. It is cut up by hill streams, and suitable soil conservation measures will be necessary in some portions of the block. It is at present not accessible by any road. The soil is red. The average rainfall is about 40 inches. Only dry crops can be grown in the area. The cost of reclamation is estimated at Rs. 300 per acre.

26. *Block* 22 measuring 293 acres is located in village Akulakatta, in the Bobbili taluk of the Srikakulam district. The area is infested with thick growth of shrubs and bushes and can be cleared by tractors. The soil is red. The area receives a rainfall of about 50 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 200 per acre.

27. *Blocks* 23 *and* 24 comprising 966 acres are located in villages Kunnapur and Pothiapalli, respectively, in the Nizamabad district. The area is infested with weeds and shrubs. The soil is red and sandy. The area receives a rainfall of 45 to 50 inches. Wells can be sunk to provide irrigation to the area. The cost of reclamation is estimated at Rs. 50 per acre.

28. *Block* 25 measuring 250 acres is located in the Armoor taluk of the Nizamabad district. The area is infested with shrubs and bushes and can be cleared with the help of tractors. The soil is red.

The area receives a rainfall of about 40 inches. Irrigation is available from the Nizamsagar canal for growing one crop in the year. The cost of reclamation is estimated at Rs. 100 per acre.

29. *Block* 26 measuring 431 acres is located in the Narayankhed taluk of the Medak district. The area is classified as pasture land and is infested with shrubs and bushes. The soil is black. The area receives a rainfall of about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

Category II

30. Thirty-five blocks comprising a total area of 37,605 acres have been located for reclamation in this category as per details given below:—

District	Block No.	Area (acres)
East Godavari	27	500
Guntur	28—37	9,505
Krishna	38—61	27,600

31. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

32. *Block* 27 comprising 50 acres is situated in the Razole taluk of the East Godavari district. The lands are flat and are saline. The area is commanded by the Mamidithota Extension Channel, but the supply of irrigation water is not adequate as the area is located at the tail-end of the channel. If irrigation facilities are improved, these lands can be brought under cultivation. The cost of reclamation is likely to be high.

33. *Block* 28 measuring 500 acres lies adjacent to village Nizampatnam, in the Guntur district. The land which was formerly classified as reserve forest, is now available for cultivation. The soil is black and the area receives a rainfall of 30 to 40 inches. Investigations for providing perennial irrigation to the area are being made. The cost of reclamation is estimated at about Rs. 200 per acre.

34. *Block* 29 comprising 1,000 acres also lies in village Nizampatnam. A part of this area has been handed over to the Ex-servicemen's Co-operative Society. About 300 acres are already under irrigation and there is a proposal to supply irrigation to the remaining area at a cost of about Rs. 2 lakhs. The land is saline but can be reclaimed when canal irrigation is available. The cost of reclamation is estimated at Rs. 150 per acre.

35. *Block* 30 comprising 500 acres is located in village Gangadipalam, in the Guntur district. It is a low-lying area and is subject to flooding during high tides. A scheme costing Rs. 12 lakhs has been prepared for supplying irrigation water from the Krishna Right Bank Canal to the block and certain other areas. For reclaiming the land, protective bunds on the southern and western sides will have

to be constructed in order to prevent erosion of the land by the tidal action of the sea. The cost of reclamation is estimated at Rs. 150—200 per acre.

36. *Block* 31 comprising 600 acres is located in village Potumereka, in the Guntur district. A portion of the area is low-lying and is subject to inundation by the drainage water of the Bhattiprole main drain and other local drains in the vicinity. The reclamation of the lands in the block involves the construction of bunds to prevent drain-water from entering the area. Drainage facilities in the area will also have to be improved by widening and strengthening the existing drains. The block lies at the tail-end of an irrigation channel, and hence irrigation is not assured. The cost of construction of bunds and demarcation of plots will be about Rs. 200 per acre.

37. *Blocks* 32 *and* 33. These two blocks are situated in village Dindi, in the Guntur district. The lands are saline, but can be made fit for wet cultivation after taking suitable ameliorative measures. Irrigation can be provided by extending the Quchinapudi channel over a length of 2 miles in Adavuladeevi lands. The cost of these measures is estimated at Rs. 200 per acre.

38. *Blocks* 34 *and* 35 measuring 696 and 898 acres, respectively, are located in the Ongole taluk of the Guntur district. The land is saline. Besides irrigation, drainage is an essential requirement. There is a drain in block 34, which can be improved to serve as a drainage channel. On the completion of the Nagarjunsagar project, both the blocks will receive the benefit of irrigation. The lands, after reclamation, can grow good crops of paddy. The cost of reclamation will be Rs. 200 per acre.

39. *Blocks* 36 *and* 37 comprising 4,534 acres are located in villages Devarampadu and Anantavaram, in the Guntur district. The soil is saline and sandy. The land is not fit for growing agricultural crops, but may be planted to casuarina. No irrigation is available.

40. *Blocks* 38—49 comprising 9,800 acres are located in the villages mentioned below in the Krishna district:—

Kona.
Chinnapuram.
Bandar.
Pedapatnam.
Interu.
Nidamarru.
Laxmipuram.
Chinagollampalam.
Rudravaram.
Gundupalam.
Tadivennu.
Chandala.

The lands in these blocks are saline. Irrigation is available in the Kona, Chinnapuram, Bandar and Pedapatnam blocks, and there is a proposal to extend irrigation to the Rudravaram, Gundupalam, Nidamarru, Chinagollampalam, Tadivennu and Chandala blocks. Irrigation can also be extended to the Interu and Laxmipuram blocks. With the completion of the Krishna barrage, adequate and timely supply of water will be ensured. The construction of bunds with sluice gates will be necessary to prevent the ingress of salt-water into the blocks. Adequate drainage will have to be provided. The cost of reclamation is estimated at Rs. 200—300 per acre.

41. *Blocks* 50—54 comprising 5,100 acres are located in the Kaikalur taluk of the Krishna district. The lands in most of the blocks are saline. A portion of the area is low-lying and is subject to flooding. The problems of reclamation are the same as for blocks 38—49.

42. *Blocks* 55—61 comprising 12,700 acres are located in the Divi taluk of the Krishna district. The lands are saline. A bund has been constructed on the Divi island to prevent the ingress of sea-water during high tides. Although irrigation is available in all the blocks except block 61, to which irrigation can also be extended from the Edurumondi pumping scheme, the supply is not adequate and timely for reclaiming the lands. The position will improve with the completion of the Krishna barrage. Early steps should, therefore, be taken to allot the lands to the cultivators before irrigation from the Krishna barrage becomes available. The lands, after reclamation, are capable of growing good crops of paddy. The cost of reclamation is estimated at Rs. 100—150 per acre.

43. To sum up, it may be stated that the saline lands, now lying waste in the districts of Guntur and Krishna, can be rendered productive if adequate irrigation is provided and, wherever necessary, the drainage of these lands is improved by widening the existing drains or constructing new ones. The lands should also be protected by the construction of bunds with sluice gates so as to prevent the ingress of salt water during high tides and to control the outflow of the rain-water. Most of the areas where saline lands are found, have already some irrigation facilities, and it is possible to augment them without incurring heavy expenditure. We recommend that the reclamation of salt-affected lands should be taken up on a priority basis during the Third Plan period. The expenditure on this account can be met partly from the provision made for the reclamation of saline and alkaline lands by the Ministry of Food and Agriculture and partly from the amount earmarked for flood control, drainage, anti-waterlogging and anti-sea erosion by the Ministry of Irrigation and Power.

Category III

44. A total area of 1,36,341 acres of dry land in category III has been located for reclamation as per details given below:—

District	Block No.	Area (Acres)
Cuddappah	62—72	5,755
Nellore	73—138	43,932
Hyderabad	139—148	6,710
Karimnagar	149—173	10,227
Anantapur	174—175	1,455
Chittoor	176	633
Khammam	177	890
Nalgonda	178—186	3,386
Mehboobnagar	187—201	6,739
Kurnool	202—264	56,614

45. A few comments in respect of each block are given below, while fuller details are given in Appendix F.

46. *Block* 62 comprising 368 acres is located in village Rayavaram, in the Rayachoty taluk of the Cudappah district. The area is infested with weeds, shrubs and bushes. Large boulders and stones are also present. Levelling of the area will be necessary. The soil is red. The area receives a rainfall of about 25 inches. Of the total area of 368 acres, about 303 acres are likely to receive irrigation from the Puncha project. The cost of reclamation is estimated at Rs. 100 per acre.

47. *Block* 63 measuring 940 acres is located in village Kalaspad, in the Cudappah district. The area is infested with thick growth of jungle and bushes, which can be cleared with the help of tractors. The soil is gravelly. The rainfall is about 25 inches. No irrigation is available at present, but it can be provided by constructing wells. The cost of reclamation is estimated at Rs. 200 per acre.

48. *Block* 64 measuring 287 acres is located in village Peddapalli, in the Cudappah district. The entire block is over-grown with shrubs and jungle and can be cleared with the help of tractors. The soil is red and fertile. The area receives a rainfall of about 30 inches. Wells can be sunk in the area as the water-level is fairly high. The cost of reclamation is estimated at Rs. 100 per acre.

49. *Block* 65 comprising 379 acres is located in village Rachagudipalli, in the Sidhout taluk of the Cudappah district. The area is infested with shrubs and jungle. The soil is red loamy, and, with adequate irrigation, is suitable for growing garden crops like oranges. Of the total area of 379 acres, about 230 acres are fertile and can produce excellent crops. Wells can be sunk at a low cost as the water-table is fairly high. The cost of reclamation is estimated at Rs. 100 per acre.

50. *Block* 66 measuring 279 acres is located in village Ganjigunta, in the Cudappah district. The area is infested with thick growth of shrubs and bushes and can be cleared with the help of tractors. The soil is red and poor in organic matter. The area receives a rainfall of about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 250 per acre.

51. *Block* 67 comprising 281 acres is located in village Chintakunta, in the Cudappah district. The land is infested with shrubs and bushes. The soil is red loamy. The area receives a rainfall of about 20 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

52. *Blocks* 68—72 comprising 3,221 acres are located in the Rajampet taluk of the Cudappah district. Most of the area is infested with shrubs and bushes and is stony. The soil is red loam. The area receives a rainfall of about 25 inches. No irrigation is available. The cost of the reclamation is estimated at about Rs. 200 per acre.

53. *Blocks* 73—77 comprising 1,612 acres are situated in the Rapur tehsil of the Nellore district. The area is infested with shrubs and bushes and can be reclaimed with the help of tractors. The soil is red and gravelly. The rainfall is about 20 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 300 per acre.

54. *Block* 78 comprising 553 acres is located in the Podili taluk of the Nellore district. Other details are the same as for blocks 73—77.

55. *Blocks* 79—81 comprising 3,177 acres are located in the Kavali taluk of the Nellore district. The area is infested with shrubs and bushes. The soil is red and poor in organic matter. No irrigation is available. Only dry crops can be grown. The cost of reclamation is estimated at Rs. 100 per acre.

56. *Blocks* 82—84 comprising 1,685 acres are located in the Atmakur taluk of the Nellore district. The area is infested with small shrubs and bushes. The soil is red. The rainfall is about 30 inches. The first two blocks can be brought under cultivation after undertaking suitable reclamation measures, whereas block 84 is not fit for cultivation being situated in the bed of the Pennar river. The area is likely to receive irrigation from the Nandikonda project which is under execution. The cost of reclamation is estimated at Rs. 50 per acre.

57. *Block* 85 comprising 280 acres is located in village Chakracharayulavari, in the Nellore district. The area is infested with small bushes and shrubs here and there, and can be reclaimed by manual labour. The area is generally flat. The rainfall is about 30 inches. There is a tank in the area which, if repaired, can irrigate about 40 acres. The rest of the area is suitable for growing dry crops only. The cost of reclamation is estimated at about Rs. 50 per acre.

58. *Blocks* 86—90 comprising 2,776 acres are located in the Venkatagiri tehsil of the Nellore district. The area is infested with small bushes and shrubs here and there, and can be reclaimed by manual labour. The soil is red loam. The rainfall is about 30 inches. Although irrigation is not at present available, the area will come under the command of the Somasila project when completed.

59. *Blocks* 91-92 comprising 884 acres are located in village Idagali, in the Nellore taluk of the same district. The land is flat and is infested with small bushes here and there. It can be reclaimed by manual labour. The soil is red and lateritic. Block 91 can be irrigated from the Survepalli reservoir, but there are no facilities for irrigating block 92. The cost of reclamation is likely to be high.

60. *Block* 93 measuring 2,427 acres is located in village Kolanukuduru, in the Nellore taluk of the same district. It is infested with small bushes here and there. The area is low-lying and is submerged during the rainy season. No irrigation is available. The cost of reclamation is likely to be high.

61. *Block* 94 measuring 286 acres is located in village Vogurpad, in the Nellore taluk of the same district. It is infested with small bushes and shrubs, and can be reclaimed by manual labour. The soil is red and lateritic. The rainfall is about 30 inches. No irrigation is available. Only dry crops can be grown. The cost of reclamation is likely to be high.

62. *Block* 95 comprising 479 acres is located in village Vellanti, in the Nellore taluk of the same district. The area is infested with small shrubs and bushes, and can be reclaimed by manual labour. Other details are the same as for block 94.

63. *Block* 96 comprising 273 acres is located in village Kandamur, in the Nellore taluk. The area is infested with shrubs and bushes, and can be reclaimed by manual labour. The soil is red. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is likely to be high.

64. *Block* 97 comprising 304 acres is located in village Southmopur, in the Nellore taluk. The area is infested with small bushes and shrubs and can be reclaimed by manual labour. The soil is red. No irrigation is at present available. The cost of reclamation is likely to be high.

65. *Blocks* 98—137 comprising 24,413 acres are located in the Darsi taluk of the Nellore district. The area is infested with small bushes and shrubs, and the land is gently sloping. It is poor in organic matter. The area receives a rainfall of about 20 inches. Most of the blocks will receive irrigation from the Nagarjunsagar Project which is under execution. Once irrigation is available, the land is suitable for growing cotton, food crops and pulses. The cost of reclamation is likely to be high.

66. *Block* 138 comprising 4,782 acres is located in village Allurpet, in the Kovuri taluk of the Nellore district. About 1,200 acres are under cultivation. The area is low-lying and swampy. Before the land is brought under cultivation, suitable measures for drainage and construction of flood banks will have to be undertaken in addition to the provision of irrigation. Whether the reclamation of the area is economically feasible needs to be carefully examined by the appropriate department of Government.

67. *Block* 139 comprising 1,270 acres is located in village Gopanpally, in the Hyderabad taluk of the same district. The area is rocky. In about 330 acres, dry crops are being grown. The area is infested with shrubs and bushes, and contains huge boulders. The soil is red sandy loam and is poor in organic matter. The rainfall is 35 to 40 inches. Even after reclamation, the prospects of growing foodcrops in the reclaimed land are not encouraging. The cost of reclamation is estimated at Rs. 300 per acre.

68. *Block* 140 comprising 930 acres is located in village Kukatpally, in the Hyderabad taluk of the same district. The area consists of three different categories of land, namely, reserve forest extending over 707 acres, pasture lands covering over 119 acres and *patta* lands comprising over 104 acres. About 100 acres are being cultivated with dry crops. The reserve forests areas are not available for cultivation. The remaining area is infested with shrubs and bushes, and contains boulders. The soil is red sandy loam and is poor in organic matter. The rainfall is about 40 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 300 per acre.

69. *Blocks* 141-142 comprising 260 acres and 678 acres, respectively, are located in village Mohboobpet and Madhapur, in the Hyderabad taluk of the same district. Details regarding the nature of land, type of soil, etc., are the same as for block 140.

70. *Block* 143 comprising 819 acres is located in village Yusufguda, in the Hyderabad taluk of the same district, and is in the municipal limits of the Hyderabad Municipal Corporation. The area

is infested with shrubs, bushes and boulders. The soil is red. The rainfall is about 35 inches. The land is fertile and, if irrigation is provided by construction of storage reservoirs, etc., double cropping can be practised in an area of 700 acres. The cost of reclamation is estimated at Rs. 300 per acre.

71. *Block* 144 comprising 350 acres is located in Shabnagar kurd, 9 miles from Hyderabad. The area is under the control of the Forest Department and is not likely to be available for cultivation.

72. *Block* 145 comprising 330 acres is located in village Malkajgiri, 6 miles from Secunderabad. The soil is red and black, and the land is slightly sloping. The rainfall is about 30 inches. No irrigation is available. In view of the fertility of the land and its proximity to Secunderabad, the block can be developed for growing vegetables, etc., by providing perennial irrigation by constructing wells. The cost of reclamation is estimated at Rs. 300 per acre.

73. *Blocks* 146—148 comprising 2,073 acres are located in the Chevella taluk of the Hyderabad district. The area can be brought under cultivation after taking suitable soil conservation measures. The rainfall is about 27 inches. The soil is red. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

74. *Blocks* 149—193 comprising 10,227 acres are located in the Sircilla, Manthani and Jagtial taluks of the Karimnagar district. The land is over-grown with thick jungle, shrubs and bushes. The area is sparsely populated by tribal people, and the means of communications are poor. The soil is red and black, and is fairly rich in organic matter. No irrigation is available. Being mostly a hilly terrain, there are many streams which can be harnessed to provide irrigation to the reclaimed lands. The rivers Manjira and Godavari are also flowing close by, and the prospects of providing lift irrigation from these rivers may be investigated. The area seems to have excellent potentialities for establishing colonies of tribal people on a co-operative basis. The cost of reclaiming land is estimated at Rs. 150—200 per acre.

75. *Blocks* 174-175 comprising 1,455 acres are located in village Thimmasamudram, in the Kalyandurg taluk of the Anantpur district. Part of the area is already under cultivation, and only about 900 acres may be available for reclamation. The land is gravelly and uneven. There are some hillocks in a portion of the block. The soil is red and shallow, being barely 9 inches in depth. The rainfall is 30 inches. No irrigation is available. The land seems to be more suited for afforestation.

76. *Block* 176 comprising 633 acres is located in village Gaddamvaripalli, in the Punganur taluk of the Chittoor district. The land is infested with trees, shrubs and bushes, and can be reclaimed by manual labour. The soil is red. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

77. *Block* 177 comprising 890 acres is located in village Kistaram, in the Burgumpad taluk of the Khammam district. The area is infested with shrubs and bushes, and can be reclaimed with

the help of tractors. The area is gently sloping. The soil is black. The rainfall is about 35 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

78. *Blocks* 178—180 comprising 1,069 acres are located in the Nalgonda taluk of the same district. The area is infested with shrubs and bushes, and can be reclaimed by manual labour. The soil is black. The rainfall is about 32 inches. Irrigation can be provided by constructing wells. The cost of reclamation is estimated at Rs. 100 per acre.

79. *Blocks* 181—183 comprising 896 acres are located in the Deverkonda taluk of the Nalgonda district. The area is being cultivated unauthorisedly by the ryots.

80. *Blocks* 184—186 comprising 1,421 acres are located in the Suryapet, Bhongir and Rammanpet taluks, respectively. The area is infested with shrubs and bushes and can be cleared with the help of tractors. The soil is black. The rainfall is about 30 inches. No irrigation is available. Only dry crops can be grown. The cost of reclamation is estimated at Rs. 100 per acre.

81. *Block* 187 comprising 570 acres is located in the Ghat circle in the Gadwal taluk of the Mehboobnagar district. The area is infested with scrub jungle. The soil is red. Most of the area is gravelly. The rainfall is about 25 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 75 per acre.

82. *Blocks* 188—201 comprising 6,169 acres are located in the Nagar Kurnool taluk of the Mehboobnagar district. The details of the area are the same as for block 187.

83. *Blocks* 202—264 comprising 56,614 acres are located in the Alagada, Merkapur, Dhone, Pattikonda, Nandyal and Nandiketpur taluks of the Kurnool district. The soil is mostly red, although at certain places there is a mixture of red and black soils. The land is gently sloping. The depth of the soil is 2 to 3 feet. The rainfall is 20 to 25 inches. No irrigation is available. Only dry crops can be grown. The cost of reclamation is estimated at Rs. 50 per acre.

84. To sum up, it may be stated that most of the wastelands in category III are located in the districts of Nellore, Kurnool and Karimnagar with a rainfall of 25 to 30 inches. In the Kurnool and Karimnagar districts where about 66,000 acres of wastelands have been offered for reclamation, crop growing is a gamble in the rains as this area suffers from low and variable rainfall. Suitable measures for soil and water conservation are necessary for successful cultivation in these scarcity areas. We recommend that contour-bunding of eroded lands followed by a suitable system of dry farming should be adopted on a wide scale. The measures should, however, be undertaken on a complete watershed basis. As regards the Nellore district, the wastelands offered for reclamation in this district are likely to be under the command of the Nagarjunsagar project, and it is necessary that a rapid survey is made of these lands before irrigation is available from the project.

SECTION C

(Disposal of reclaimed lands for cultivation)

Nature of ownership of wastelands and their disposal for cultivation

85. In this section, we deal with the various measures needed for the disposal and development of wastelands which have been located in the State. The entire area located for reclamation in the State belongs to the Government.

86. In order to bring the wastelands belonging to Government under cultivation, it is suggested that these lands may be allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc., in accordance with the existing rules for the disposal of wastelands in the different areas of the erstwhile Hyderabad State, namely, the former Telengana area, and the former Andhra State. These rules are fairly comprehensive and deal with the manner of disposal of wastelands. Some of the areas can be utilised for setting up co-operative colonies of landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc. A model settlement scheme for such areas is given in Appendix G. In this connection, reference is invited to the note on "Small Scale Agriculture in Britain" by Shri M. P. Pai, Chief Secretary to the Government of Andhra Pradesh, in which he has described the system of co-operative farming, the main object of which is to relieve the farmer of the various problems of management as also to provide services which otherwise he may find it uneconomical to provide for himself, and thus to enable him to devote his whole time to production. These co-operative farms are run by the Land Settlement Association Ltd., which is an organisation of small farmers with holdings varying from 2 to 10 acres, but generally about 4 acres in extent. Each farm is intended to be run by the farmer and his wife, and an adult child or two. Cropping on these farms is generally of an intensive type concerned mainly with horticulture or market gardening. This scheme can be adapted to Indian conditions with suitable modifications, particularly in the development of lands which will come under the command of the Nagarjunsagar project, where it may be possible to demonstrate through the settlers on the irrigated lands the advantages of mixed farming combined with specialised types of farming like horticulture, dairying, etc. Extracts from Shri Pai's note are given at the end of the report in Appendix H.

Suggestions for effective utilisation of wastelands

87. We may now make a few suggestions for the effective utilisation of wastelands offered for reclamation. We are of the view that the success in the utilisation of wastelands is achieved only if reclamation is followed by suitable follow-on cultivation operations.

88. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the areas included in category III mentioned in the previous section.

89. After the reclamation measures have been carried out, the responsibility for the follow-on cultivation in the reclaimed lands should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. For the proper utilisation of reclaimed wastelands, the cultivators will have to be educated in the adoption of suitable soil management practices, including the dry farming system of cultivation for the wastelands in category III. This can be done by organising trials and demonstrations of improved agricultural practices on cultivators' holdings, and by arranging for the supply of agricultural requisites, such as improved dry farming implements, seeds, fertilizers, etc. We attach great importance to these trials and demonstrations as the success of the reclamation projects primarily depends upon the adoption of suitable soil management practices in the reclaimed lands. The responsibility for extension work in the reclaimed lands may be transferred to the Community Development Organisation after the initial period of demonstrations.

90. Wherever irrigation facilities can be provided by the construction of wells, loans for this purpose may be given on a liberal scale to the cultivators.

91. As mentioned in the earlier section, most of the wastelands found in the Nellore district are likely to receive irrigation from the Nagarjunsagar project. Since the cultivators in the area are not accustomed to wet cultivation, suitable systems of cropping under irrigated conditions should be demonstrated to them with a view to making the best use of irrigation when it becomes available.

92. Before the wastelands are allotted to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., these should be reclaimed.

93. In any settlement project, the selection of suitable settlers is a vital factor contributing to its success. Accordingly, special attention should be given to this important aspect of the settlement work so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work, are selected.

94. In order that the settlement work is successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. Experience has shown that where the District Collectors and the Block Development Officers take personal interest in the settlement work, the projects are often successful.

95. The general crop patterns of the lands in the different categories vary with the rainfall of the tract. In general, however, there are three types of cultivated land, viz., wet, garden and dry. Wet lands are irrigated from canals and channels cut from rivers and streams. For the garden lands the main source of irrigation is wells.

95.1. Paddy is extensively cultivated in wet lands, although sugarcane is also a valuable crop of these lands. In the rich deltaic soils under river irrigation systems, and in the interior districts under well or tank irrigation, paddy is the main crop. In many places, two paddy crops are raised in a year. The first crop (*sarva*) is planted in

July-August and is harvested in December-January. The second crop (*dalwa*) is planted in January-February and harvested in April-May. In Telengana the two rice crops are called *abi* and *tabi*. In single crop wet lands, the practice is to grow fodder crops like sannhemp, or pulses such as black gram or green gram after the paddy crop is harvested. Sugarcane cultivation has become popular in wet lands, particularly in the Nizamabad, Visakhapatnam, Chittoor, East Godavari, West Godavari, Srikakulam, Krishna, Anantapur and Medak districts.

95.2. The garden lands are irrigated from wells, and the crops raised in them are *ragi*, banana, vegetables and fruits. Turmeric is a valuable spice crop of the garden lands. Cocoanut thrives in the rich soil of the deltaic regions. Among the fruit crops grown on garden lands are mangoes, oranges, bananas, grapes, chikoo and guava.

95.3. On dry lands, millets, pulses, groundnut, cotton, castor, chillies and tobacco are grown. Millets are largely grown as rain-fed crops. Pulses such as red gram, green gram and black gram are sown mixed with millets, while Bengal gram and coriander are raised as pure crops in the cold season. Millets are also grown mixed with cotton.

95.3.1. Among the oilseed crops, sesamum and castor are generally grown as dry crops. Castor is cultivated as a pure crop or mixed with millets or pulses, or with other oilseed crops like groundnut and sesamum. It is also grown as a border crop with turmeric, chillies or sugarcane, Groundnut is grown both as a dry or irrigated crop.

95.3.2. Tobacco is an important cash crop grown in the *rabi* season. Like tobacco, chillies are extensively cultivated as a *rabi* crop after the rainy season. They are transplanted in October-November and harvested in January-February. Cotton is grown in rotation with jowar and groundnut.

Economic aspects of reclamation

96. We may now examine the economic aspects of reclamation in terms of the additional agricultural production and the expenditure involved. At present, no reliable figures of additional yields of food crops expected to be obtained from reclaimed lands are available. We, therefore, recommend that crop-cutting experiments may be conducted in the reclaimed lands during the Third Five Year Plan, particularly in the districts of Krishna, Guntur, Kurnool, Nellore and Karimnagar. Reliable estimates of the cost of reclamation are also not available.

97. In the absence of reliable figures of additional out-turn of foodcrops expected to be obtained from reclaimed lands and the cost of reclamation, we have adopted the figures as estimated by the revenue authorities, for working out the economic aspects of reclamation. The figures furnished by them are based on their experience and observations. They, however, broadly indicate the cost of reclamation and the benefits that will accrue in the form of additional agricultural production.

98. The wastelands in category I are found in the districts of East Godavari, West Godavari, Visakhapatnam, Srikakulam, Nizamabad and Medak, which receive an average rainfall of 40 to 50 inches. Although most of these areas do not have irrigation facilities, it is possible to provide irrigation by sinking wells or constructing tanks. The important crop in these areas is paddy, and it is estimated that at least 6 maunds of additional food can be obtained from these lands after reclamation, although in the wastelands of Nizamabad and Visakhapatnam, higher yields up to 15 maunds per acre may be expected.

99. The wastelands in category II are mostly found in the districts of Guntur and Krishna. Experience has shown that these lands, after reclamation, are capable of yielding at least 20 maunds of paddy per acre.

100. As regards the dry lands included in category III, most of them are located in the districts of Kurnool, Karimnagar and Nellore. The important crops cultivated in the districts of Kurnool and Karimnagar are jowar, bajra, groundnut and sesamum. In these districts the average yield per acre of jowar ranges from 263 to 530 pounds, of bajra from 200 to 590 pounds, of sesamum from 110 to 252 pounds, and of groundnut from 637 to 918 pounds (*vide* Appendix D). These crop yields can be substantially increased if a well-designed programme of contour-bunding followed by a suitable dry farming system of cultivation is adopted in the dry lands. For our present purpose, we may assume an average yield of five maunds of foodgrains per acre after the adoption of soil and water conservation measures in the reclaimed lands. As regards the Nellore district, most of the wastelands offered for reclamation in this district are likely to come under the command of the Nagarjunsagar project, and when irrigation is available, paddy will be the major crop in these areas. On a conservative estimate, an additional food production of 15 maunds per acre may be assumed.

101. To assess the relative economic benefits of reclamation between the three categories of reclaimable lands, the figures of estimated additional production should be studied in relation to the cost of reclamation. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional food production.

TABLE I

Cost of reclamation of land in the three categories and estimated additional production

Category	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional production per acre (maunds)	Total additional production (maunds)	Value of total additional production (Rs.)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I ..	5,765*a*	224	12,90,800	6	34,590	3,45,900	60	37·3
II ..	32,571*b*	191	62,44,200	20	6,51,420	65,14,200	200	9·5
III ..	99,374*c*	99	98,46,650	5	4,96,870	49,68,700	50	19·8
Total	1,37,710	126	1,73,81,650	..	11,82,880	1,18,28,800	..	..

(*a*) Excludes 9,223 acres of which the cost of reclamation is reported to be high.

(*b*) Excludes 500 acres of which the cost of reclamation is reported to be high, and 4,534 acres which are not fit for growing agricultural crops.

(*c*) Excludes 36,967 acres of which the cost of reclamation is reported to be high or the areas not available for cultivation.

N.B.—(*1*) The main food crops of the areas included in categories I, II and III are paddy, jowar, bajra, *ragi*, gram and groundnut. A common price of Rs. 10 per maund is assumed.

(2) In category III, somes of the areas will be irrigated by the Nagarjunsagar project. The additional production from the dry lands after reclamation has been assumed as 5 maunds per acre, and the estimated production of 15 maunds per acre on account of irrigation in the lands to be irrigated by the Nagarjunsagar Project has not been taken into account.

102. It will be seen from the table that the cost of reclaiming 1,37,710 acres of wastelands in categories I, II and III, out of 1.89 lakh acres offered for reclamation, comes to about 1.74 crores, i.e., Rs. 126 per acre. The estimated additional production from the reclaimed lands is 43,329 tons valued at Rs. 1.18 crores. Thus the value of production will cover the cost of reclamation in two crop seasons.

103. As regards the economic aspects of reclamation between the three categories of wastelands, the areas included in category II (saline lands) seem to be the most profitable in terms of additional food production which is about 20 maunds for an expenditure of about Rs. 190 per acre on land improvement. On the other hand, category III offers the greatest promise for increasing agricultural production since large areas of dry lands are available for cultivation. The wastelands in the Nellore district, most of which are expected to receive irrigation from the Nagarjunsagar project, belong to this category. As regards category I, the extent of areas offered, for reclamation is rather small and the cost of reclamation is relatively high.

Priorities between the three categories of reclaimable lands

104. We now come to the assignment of priorities between the three categories of reclaimable lands found in the State. The answer to this question will be found in what has already been stated in the previous paragraph.

105. We recommend that the wastelands included in category II (saline lands) may be assigned the highest priority in view of the fact that the reclaimed lands are capable of producing good crops of paddy.

106. The wastelands included in category III should also be assigned an equally high priority because large tracts of these lands are available which, when reclaimed, will assist in increasing the agricultural production in the State. Some of the dry lands, particularly those in the Nellore district, which will receive the benefit of irrigation from the Nagarjunsagar project, are included in this category.

107. The wastelands included in category I may be assigned the next order of priority.

SECTION D

(Summary of general conclusions and recommendations)

1. Of the total area of 10.50 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", an area of 1.89 lakh acres has been offered for reclamation in blocks of 250 acres or more. It appears that the bulk of the wastelands are found in small pieces scattered all over the State. Moreover, the allotment of wastelands to the members of the Scheduled Castes and the Scheduled Tribes, etc., has been going on for some time past, and it is possible that large areas of culturable waste have been disposed of in this manner.

(Paragraph 15)

2. The wastelands offered for reclamation in the State can be divided into the following three categories:—

I—Areas infested with thick growth of jungle, shrubs and bushes;

II—Saline lands, and

III—Dry lands.

(Paragraph 16)

3. The distribution of wastelands in the three categories is as under:—

Category	Area (Acres)
I	14,988
II	37,605
III	1,36,341
Total	1,88,934

(Paragraph 17)

4. The wastelands included in category I are infested with thick jungle, shrubs and bushes, and are located in tracts with an average rainfall of 40—45 inches. The cost of reclamation varies from Rs. 100 to Rs. 500 per acre.

(Paragraphs 21—29)

5. The saline lands included in category II, lying waste in the districts of Guntur and Krishna, can be rendered productive if adequate irrigation is provided and, wherever necessary, the drainage of these lands is improved by widening the existing drains or constructing new ones. The lands should also be protected by the construction of bunds with sluice gates so as to prevent the ingress of salt water during high tides and to control the outflow of the rainwater. The cost of reclamation is estimated at about Rs. 190 per acre. These lands should be taken up for reclamation on a priority basis during the Third Plan period.

(Paragraph 43)

6. Most of the wastelands in category III are located in the districts of Nellore, Kurnool and Karimnagar, where the annual rainfall is 25 to 30 inches. In the Kurnool and Karimnagar districts where about 66,000 acres of wastelands have been offered for reclamation, crop growing is a gamble in the rains as this area suffers from low and variable rainfall. Suitable measures for soil and water conservation are necessary for successful cultivation in these scarcity areas. Contour bunding of eroded lands followed by a suitable system of dry farming should be adopted on a wide scale. These measures should, however, be undertaken on a complete watershed basis. As regards the Nellore district, the wastelands offered for reclamation in this district are likely to come under the command of the Nagarjunsagar project, and it is necessary that a rapid survey is made of these lands before irrigation is available from the project.

(Paragraph 84)

7. The entire area located for reclamation in the State belongs to the Government.

(Paragraph 85)

8. In order to bring under cultivation the wastelands belonging to Government, they should be allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc., in accordance with the existing rules for the disposal of wastelands in the different areas of the erstwhile Hyderabad State, namely, the Telangana area, and the former Andhra State. These rules are fairly comprehensive and deal with the manner of disposal of wastelands. Some of the areas can be utilised for setting up co-operative colonies of landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc.

(Paragraph 86)

9. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, particularly in the areas included in category III.

(Paragraph 88)

10. After the reclamation measures have been carried out, the responsibility for the follow-on cultivation operations in the reclaimed lands should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. For the proper utilisation of reclaimed wastelands, the cultivators should be educated in the adoption of suitable soil management practices, including the dry farming system of cultivation in the wastelands included in category III. This can be done by organising trials and demonstrations of improved agricultural practices on cultivators' holdings, and by arranging for the supply of agricultural requisites such as improved dry farming implements, seeds, fertilizers, etc. We attach great importance to these trials and demonstrations as the success of the reclamation projects primarily depends upon the adoption of suitable soil management practices in the reclaimed lands. The responsibility for extension work in the reclaimed lands may be transferred to the Community Development Organisation after the initial period of demonstrations.

(Paragraph 89)

11. Wherever irrigation facilities can be provided by the construction of wells, loans for this purpose may be given on a liberal scale to the cultivators.

(Paragraph 90)

12. Most of the wastelands found in the Nellore district are likely to receive irrigation from the Nagarjunsagar project. Since the cultivators in this area are not accustomed to wet cultivation, suitable systems of cropping under irrigated conditions should be demonstrated to the cultivators with a view to making the best use of irrigation when it becomes available.

(Paragraph 91)

13. Before the wastelands are allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc., these should be reclaimed.

(Paragraph 92)

14. In any settlement project, the selection of suitable settlers is a vital factor contributing to its success. Accordingly, special attention should be given to this important aspect of the settlement work, so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work, are selected.

(Paragraph 93)

15. In order that the settlement work is successful, it is necessary that the revenue/block agency should be associated with it, so that the problems of the settlers are attended to as expeditiously as possible. Experience has shown that, where the District Collectors and the Block Development Officers take personal interest in the settlement work, the projects are often successful.

(Paragraph 94)

16. At present, no reliable figures of additional yields of food crops expected to be obtained from the reclaimed lands are available. Crop-cutting experiments may, therefore, be conducted in the reclaimed lands during the Third Plan, particularly in the districts of Krishna, Guntur, Nellore, Kurnool and Karimnagar.

(Paragraph 96)

17. The total cost of reclaiming 1,37,710 acres of wastelands in categories I, II and III, out of 1.89 lakh acres offered for reclamation, comes to about 1.74 crores, i.e., Rs. 126 per acre. The estimated additional production from the reclaimed lands is 43,329 tons of foodgrains, valued at Rs. 1.18 crores. Thus the value of production will cover the cost of reclamation in two crop seasons.

(Paragraph 102)

18. The areas included in category II (saline lands) seem to be the most profitable in terms of additional food production which is about 20 maunds for an expenditure of about Rs. 190 per acre on

land improvement. On the other hand, category III offers the greatest promise for increasing agricultural production since large areas of dry lands are available for cultivation. The wastelands in the Nellore district, most of which are expected to receive irrigation from the Nagarjunsagar project, belong to this category. The extent of the area offered for reclamation in category I is small, and the cost of its reclamation is relatively high.

(Paragraph 103)

19. The following order of priority may be assigned to the wastelands located in the State:—

Category	Priority
I	III
II	I
III	II

(Paragraphs 104—107)

Sd. (B. N. UPPAL)
Chairman

Members

1. Sd. (J. P. MITAL)
2. Sd. (F. C. GERA)
3. Sd. (M. S. V. RAMA RAO)

सत्यमेव जयते

Co-opted Members from the State

1. Sd. (M. P. PAI)
Chief Secretary

2. Sd. (S. A. QUADER)
Addl. Secy. to Govt. P.W.D.

3. Sd. (C. SESHAGIRI RAO)
Secretary, Rev. Deptt.

4. Sd. (S. A. ABBAS)
Dy. Secy., Planning & L.A. Deptt.

5. Sd. (C. V. K. REDDY)
Asst. Chief Conservator of Forests

6. Sd. (D. V. N. RAJU)
Dy. Chief Engineer, Irrigation

7. Sd. (M. K. ADENI)
Joint Director of Agriculture

Sd. (A. S. VENUGOPALAN)
Secretary

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APPENDIX A

K. R. DAMLE, I.C.S.,
SECRETARY.

No. F.1024/SPL/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, June **11, 1959**

MY DEAR

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be over-emphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories:

(a) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis;* and

(b) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee:—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committee will consist of the following:—

1. Dr. B. N. Uppal, Agricultural Commissioner, Government of India—*Chairman*.
2. *Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India—*Member*.
3. Shri F. C. Gera, Chairman, Central Tractor Organisation—*Member*.
4. Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation—*Member*.

In addition, the Committee will co-opt in individual States the following officers:—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective co-ordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full co-operation and provide the necessary facilities for the work of this Committee.

Yours sincerely

Sd/- K. R. DAMLE

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Government of India, was appointed a Member from the 3rd February 1960 vide Memo. 12-1/59-GMF(Co), dated the 3rd February 1960 (copy enclosed).

No. F.12-1/59-GMF(CO)

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Dedli, the 3rd February 1960

SUBJECT—*Reclamation of culturable wastelands in the country—Setting up of a Committee*

Reference this Ministry's Express letter of even number, dated the 17th June 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F.1024/SPL/59, dated the 11th June 1959, referred to therein:—

> "Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Government of India, in place of Dr. J. K. Basu since retired."

Sd/-

V. BALASUBRAMANIAN
Under Secretary

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APPENDIX B

Questionnaire issued by the Wastelands Survey and Reclamation Committee

1. What is the total area of culturable wasteland in your State? (Culturable wasteland is defined as under:—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, it is possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

Appendix 'A' Vide Item 6 of the Questionnaire

STATE:

DISTRICT:

Details in respect of Block No.................. consisting of 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land)

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the Colonization operations in the block successfully?

12. If so, what would be the likely cost of acquisition?

13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted?

14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.

15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors? If the former, is adequate labour locally available?

16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.

17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block?

18. What is the type of soil in the block? (alluviums, black, red or lateritic).

19. Is the land flat or gently sloping or steep? What is the depth of the soil?

20. What crops are grown in the area round about the block?

21. What is the yield per acre of each crop?

22. What is the nearest marketing centre for these crops?

23. What is the extent and distribution of rainfall in the area?

24. Can irrigation facilities be made available for the block? If so, what kind of facilities?

25. Whether those irrigation facilities will be perennial or non-perennial?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year Plan will cover this land?

27. What is the depth of sub-soil water? Is water sweet or brackish?

28. Are anti-malarial operations necessary in the area for successful colonization?

29. Is any endemic disease prevalent in the area? If so, do the State Government contemplate any measures to combat this disease?

30. Is drinking water available in the block?

31. Are there any drinking water wells in use?

32. Is the area subject to depredations of wild animals? If so, what animals?

33. Is the Block likely to attract settlers from distant places in the State or from other States?

34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block?

35. Do you think educated unemployed could be successfully settled in the block?

36. What should be the unit of allotment per settler?

37. Would you suggest that the settlers should put up their home-steads on allotted lands, or would you like to set up *abadis* for them? If the latter, what should be the unit of allotment for residential purposes in the village *abadi*?

38. Would it be necessary to organise any training for the settlers, before they are allotted land? (the settlement will be on co-operative basis).

39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX C

DR. B. N. UPPAL,
CHAIRMAN, WASTELANDS SURVEY
AND RECLAMATION COMMITTEE.

D.O. No. F.   /59-WLS&RC

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi, January 2, 1960
Pause 12, 1881

DEAR SHRI

Kindly refer to my letter of even number, dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable waste land in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the

Committee by the 31st January 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number, dated the 10th August 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely

Sd/-
B. N. UPPAL

All Liaison Officers in the States and Union Territories.

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APPENDIX D

Average yield (in lbs.) per acre of important crops in Andhra Pradesh during 1956-57 *(district-wise)*

District/crop	Rice	Jowar	Bajra	Ragi	Wheat	Gram	Ground-nut	Castor	Chillies	Sugar-cane	Tobacco		Turmeric	Coconut
											Virginia	Others		
Srikakulam	988	475	558	883	315	425	1,030	208	1,800	6,496	615	820	5,000	722
Visakhapatnam	1,078	362	450	963	—	475	1,053	212	1,900	8,714	—	840	5,000	784
East Godavari	1,469	450	255	448	298	425	1,008	225	1,020	7,795	638	770	4,000	1,305
West Godavari	1,110	615	558	971	291	440	907	225	675	7,862	698	930	1,500	1,022
Krishna	1,089	394	558	971	332	475	1,030	235	1,188	7,974	630	920	2,500	669
Guntur	1,278	598	365	971	332	450	1,042	240	698	7,974	660	940	5,000	489
Nellore	1,565	315	1,160	885	332	465	952	225	930	7,974	675	910	4,000	509
Kurnool	1,022	530	590	971	315	450	918	141	765	7,974	..	502	3,000	836
Anantapur	985	549	331	1,004	298	400	930	128	1,600	8,310	—	836	3,000	464
Cuddappah	1,322	312	576	917	298	400	896	128	1,700	7,974	—	—	5,000	473
Chittoor	1,194	475	719	1,326	315	425	918	218	675	8,198	—	869	3,500	1,047
Hyderabad	616	439	285	169	116	193	434	119	131	3,982	—	271	1,500	N.A.
Nizamabad	809	258	201	234	172	248	545	127	148	5,635	—	402	1,500	—
Medak	676	348	285	203	125	232	484	114	172	5,055	525	525	1,500	—
Mahbubnagar	595	203	181	209	162	223	561	165	161	2,579	—	380	1,500	—
Nalgonda	664	297	197	256	143	227	609	190	172	1,680	443	443	1,500	—
Warrangal	608	314	206	263	135	191	574	128	215	1,680	661	661	1,500	—
Khammam	638	450	285	302	90	184	583	151	206	—	532	532	1,500	—
Karimnagar	565	263	201	264	184	86	637	173	178	2,240	674	674	1,500	—
Adilabad	582	456	201	175	235	204	652	154	214	3,036	—	440	1,500	—
State	1,038	394	438	863	191	255	816	170	574	7,302	652	837	N.A.	1,145

NOTE (1)—The figures of yield per acre of tobacco are in terms of farm-cured leaf for Andhra region and including stalk or stem for Telangana region.

(2) Yield of cocoanut is given in terms of copra and not in terms of nuts.

APPENDIX E

Land utilisation statistics for Andhra Pradesh for the year 1957-58 (*district-wise*)

District	Total geographical area		Forest	Land not available for cultivation		Other cultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
	By professional survey	By Village papers		Barren & uncultur-able lands	Land put to non-agricultural use	Culturable waste	Permanent pastures and other grazing lands	Misc. tree crops and groves			
Srikakulam	2,496,954	2,491,076	433,217	494,518	79,712	203,539	93,364	25,563	99,498	153,342	908,323
Visakhapatnam	3,327,955	3,314,642	1,445,808	376,256	355,100	120,009	14,998	33,456	126,290	27,406	815 319
East Godavari	3,694,439	3,637,000	1,345,185	232,034	179,526	490,526	164,335	63,315	31,935	96,567	1,033,577
West Godavari	1,912,262	1,931,830	197,215	158,407	167,781	210,904	67,906	20,535	97,761	56,357	954,964
Krishna	2,241,178	2,236,805	221,847	310,159	106,101	119,843	53,953	36,986	85,518	28,500	1,273,898
Guntur	3,708,838	3,772,415	468,521	343,798	57,006	183,526	151,814	88,927	224,323	131,700	2,122,800
Nellore	5,090,605	4,271,087	459,589	867,788	603,189	423,657	456,437	75,918	308,622	184,401	1,492,386
Kurnool	5,937,190	5,894,616	1,701,281	299,252	259,105	406,832	19,550	25,385	201,276	153,206	2,828,729
Anantapur	4,726,247	4,728,329	476,976	411,147	275,416	459,269	29,595	44,349	216,659	299,048	2,485,870
Cuddapah	3,791,072	3,798,522	1,156,865	160,846	203,637	659,771	142,384	20,933	423,930	28,505	1,001,651
Chittoor	3,781,005	3,782,161	857,741	680,563	150,947	378,692	80,030	34,367	489,225	135,431	975,165
Hyderabad	1,252,390	1,867,129	197,238	152,851	141,543	91,036	190,484	22,479	148,288	74,020	849,190
Nizamabad	1,991,974	1,907,884	385,674	181,602	146,414	92,475	135,332	25,507	155,824	76,014	709,042
Medak	2,719,859	2,505,300	209,182	185,601	154,338	93,095	230,090	39,975	358,118	103,340	1,131,501
Mahbubnagar	4,729,882	4,560,064	737,779	269,410	177,336	91,467	177,592	19,381	647,258	63,309	2,376,532
Nalgonda	3,424,915	3,443,097	249,749	235,114	166,253	88,080	321,952	26,106	503,953	127,697	1,724,193
Warrangal	3,189,651	3,267,376	829,031	389,877	185,401	75,348	239,755	29,554	298,029	118,953	1,101,428
Khammam	2,944,173	2,548,766	999,462	153,539	130,418	93,445	172,684	8,328	99,608	66,402	824,880
Karimnagar	2,921,510	2,936,830	632,449	200,910	175,246	90,531	162,247	36,704	274,061	53,372	1,311,310
Adilabad	3,991,283	4,130,613	1,571,765	371,286	150,314	203,334	136,807	14,115	168,884	214,519	1,299,139
Total	67,873,382	67,625,992	14,576,574	6,505,018	3,864,783	4,575,379	3,041,309	691,883	4,959,060	2,192,089	27,219,897

APPENDIX F

Details of blocks in categories I, II and III offered for reclamation

District	Name of block	No. of block	Nearest Rly. Stn.	Whether accessible by fair/all weather road	Whether included in C.D. block	Area (acres)	Amount of rain-fall (inches)	Depth and nature of sub-soil water	Endemic disease
				Category I					
East Godavari	Jaddangi ..	1	Samalkota	No road	No	942	40	36-45 sweet	No
	Donelapalem ..	2	Samalkota	No road	No	553	40	36-45, sweet	No
	Chikilinta ..	3	Samalkota	No road	No	714	35	36-45, sweet	No
	Kindra ..	4	Samalkota	No road	No	936	35	36-54, sweet	No
	Anantagiri ..	5	Samalkota	No road	No	694	40	36-45, sweet	No
	Konarapuram ..	6	Samalkota	No road	No	384	35	35-45, sweet	No
West Godavari	Kalavapudi ..	7	Akividu	No road	Yes	5,000	43	NA	No
	Chintalapudi ..	8	Akividu	No road	Yes	250	40	NA	No
	Gurubhotlagudam ..	9	Akividu	No road	Yes	250	40	NA	No
	Tadikalapudi ..	10	Akividu	No road	Yes	250	40	NA	No
	Tadikalapudi ..	11	Akividu	No road	Yes	250	40	NA	No
	Makkinavarigudem	12	Akividu	No road	Yes	250	40	NA	No
	Ayyaparajugudem	13	Akividu	No road	Yes	250	40	NA	No
	Bandameherla ..	14	Akividu	No road	Yes	250	40	NA	No
	T. Narespuram ..	15	Akividu	No road	Yes	250	40	NA	No
	Seethanagaram ..	16	Akividu	No road	Yes	250	40	NA	No
	Kethavaram ..	17	Akividu	No road	Yes	250	40	NA	No
	Kethavaram ..	18	Akividu	No road	Yes	250	40	NA	No
Visakhapatnam.	Polipalli ..	19	Vizinagaram	All weather	Yes	317	Normal	NA	No
	Addamand Charakam	20	Bayavaram	All weather	Yes	328	40	30	No
	Gollalapalem ..	21	Duvada	All weather	Yes	430	40	30	No
Sirikakulam	Akulakatta ..	22	Donkinavalasa	All weather	Yes	293	40-50	30, brackish	No
Nizamabad	Kunnapur ..	23	Kamaraddy	Yes		450	42-50	32-50, sweet	No
	Pothaipatti ..	24	Kamaraddy	No road	Yes	516	40-45	32-50, sweet	No
	Lakhampalli ..	25	Nizamabad	No road	Yes	250	36	20, sweet	No
Medak	Jamagibuzurg ..	26	Kamaraddy	No road	Yes	431	36-90	NA	No
East Godavari	Antervedi ..	27	Narasapuram	No road	No	500	Normal	NA	No

Category II

Guntur	East Perra	..	28	Repally	No road	Yes	500	20-40	NA	No
	Nizampatnam	..	29	Repally	No road	No	1,000	20-40	NA	No
	Gangadipalam	..	30	Repally	No road	No	500	20-40	NA	No
	Pottumevaka	..	31	Repally	No road	Yes	600	20-40	NA	No
	Dindi	..	32	Repally	No road	Yes	350	30-40	NA	No
	Dindi	..	33	Repally	No road	Yes	427	30-40	NA	No
	Kanuparthy	..	34	Amnahorlu	No road	Yes	696	NA	NA	No
	Alluru Kottayam		35	Ongole	No road	Yes	898	NA	NA	No
	Devarempadu	..	36	Karavadi	No road	Yes	3,646	NA	NA	No
	Anatavarum	..	37	Tangutur	No road	Yes	888	NA	NA	No
Krishna	Kona	..	38	Masulipatnam	No road	Yes	1,200	Normal	3, brackish	No
	Chinnapuram	..	39	Masulipatnam	No road	Yes	1,000	Normal	6, brackish	No
	Bandar	..	40	Masulipatnam	All weather	Yes	1,000	Normal	brackish	No
	Padapatnam	..	41	Pedana	No road	Yes	1,000	Normal	brackish	No
	Interu	..	42	Pedana	No road	Yes	1,000	Normal	brackish	No
	Nidamaru	..	43	Pedana	No road	Yes	1,000	Normal	6, brackish	No
	Laxmipuram	..	44	Pedana	No road	Yes	400	Normal	6, brackish	No
	Chinagolliampalam		45	Bhimavaram	No road	Yes	800	Normal	6, brackish	No
	Rudravaram	..	46	Bander	No road	Yes	550	Normal	9, brackish	No
	Gundupalam	..	47	Bandar	No road	Yes	800	Normal	9, brackish	No
	Tadivennu	..	48	Pedana	No road	Yes	800	Normal	6, brackish	No
	Chandala	..	49	Pedana	No road	Yes	250	Normal	6, brackish	No
	Elaparru	..	50	Putlacharua	Fair weather	Yes	1,300	Normal	10, brackish	No
	Padalanka	..	51	Kaikalur	Fair weather	Yes	1,000	Normal	10, brackish	No
	Chorampudi	..	52	Mandavalli	Fair weather	Yes	1,000	Normal	10, sweet	No
	Korukollu	..	53	Keikalur	Fair weather	Yes	800	Normal	10, sweet	No
	Vaivaka	..	54	Mandevalli	Fair weather	Yes	1,000	Normal	10, sweet	No
	Uillipalem	..	55	Masulipatnam	Fair weather	Yes	1,200	sufficient	6, brackish	No
	Mandapakala	..	56	Masulipatnam	Fair weather	Yes	1,600	sufficient	6, brackish	No
	Gollapalem	..	57	Masulipatnam	Fair weather	Yes	3,800	sufficient	6, brackish	No
	Penayadru	..	58	Masulipatnam	Fair weather	Yes	1,200	sufficient	6, brackish	No
	Kammanamolu	..	59	Repalli	Fair weather	Yes	1,500	sufficient	6, brackish	No
	Perrachivara	..	60	Repalli	Fair weather	Yes	1,400	sufficient	6, brackish	No
	Edurumondi	..	61	Repalli	Fair weather	Yes	2,000	sufficient	6, brackish	No

Category III

Cuddapah	Rayavaram	..	62	Rajampet	No	No	368	N.A.	5-6, sweet	No
	Kalasapad	..	63	Giddalur	All weather	Yes	940	20-25	30-42, sweet	No
	Peddapalli	..	64	Kanamalopalli	All weather	Yes	297	31	36, sweet	No

APPENDIX F—contd.

District	Name of block	No. of block	Nearest Rly. Station	Whether accessible by fair/all weather road	whether included in C.D. block	Area (acres)	Amount of rain-fall (inches)	Depth and nature of sub-soil water	Endemic disease
Cuddapah—*contd.*	Rachagudipalli ..	65	Ventimitta	All weather	Yes	379	31	30, sweet	No
	Ganjikunta ..	66	Terragunta	Fair weather	Yes	279	10	3, sweet	No
	Chintakunta ..	67	Yerragunta	Fair weather	Yes	281	N.A.	3, sweet	No
	Pullampet ..	68	Pullampet	Fair weather	No	321	N.A.	20, sweet	No
	Dhilivalipalli ..	69	—	Fair weather	Yes	300	N.A.	20, sweet	No
	Upparapalli ..	70	Settigunta	Fair weather	Yes	850	N.A	30, sweet	No
	Akeked ..	71	Rajampet	Fair weather	No	1,150	N.A.	20, sweet	No
	Settigunta ..	72	Settigunta	Fair weather	Yes	600	N.A.	30, sweet	No
Nellore	Rapur ..	73	Gudur	All weather	No	280	N.A.	42, sweet	No
	Rapur ..	74	Gudur	All weather	No	280	N.A.	36-42, sweet	No
	Gonupalli ..	75	Gundur	All weather	Yes	385	N.A.	36-42, sweet	No
	Utukur ..	76	Gudur	All weather	Yes	280	N.A.	36-42, sweet	No
	Perumallapadu ..	77	Gudur	All weather	No	388	N.A.	36-72, sweet	No
	Jaffalapuram ..	78	Gudur	All weather	No	553	N.A.	36,42, sweet	No
	Kalipiru ..	79	Bitragunta	Fair weather	Yes	291	20	24-30, sweet	No
	Itumped ..	80	Bitragunta	Fair weather	Yes	414	20	24-30, sweet	No
	Katrayapad ..	81	Bitragunta	Fair weather	Yes	2,473	20	24-30, sweet	No
	Bommavaram ..	82	Nellore	Fair weather	Yes	937	32	N.A.	No
	Bommavaram ..	83	Nellore	Fair weather	Yes	534	32	N.A.	No
Nellore	Ananthasagaram ..	84	Nellore	Fair weather	Yes	214	32	N.A.	No
	Chakracharylavari	85	Nayaudupet	Fair weather	Yes	280	30	12, sweet	No
	Kalavalapudi ..	86	Eallakavu	Fair weather	Yes	641	33	12, sweet	No
	Kalabalapudi ..	87	Eallakavu	Fair weather	Yes	676	33	12, sweet	No
	Pathanalapad and Bheemavaram	88	Venkatagiri	Fair weather	Yes	800	33	10, sweet	No
	Vaddipalli ..	89	Venkatagiri	Fair weather	Yes	260	33	10, sweet	No
	Vembulur ..	90	Venkatagiri	Fair weather	Yes	400	31	10, sweet	No
	Idagali ..	91	Venkatachalem	All weather	Yes	436	Normal	25, sweet	No
	Idagali ..	92	Venkatachalem	All weather	Yes	448	Normal	25, sweet	No
	Kelanukuduru ..	93	Manubolu	No road	Yes	2,427	Normal	18, brackish	No
	Vogurpad ..	94	Nellore	No road	Yes	286	Normal	36, sweet	No
	Vellandi ..	95	Nellore	No road	Yes	279	Normal	25, sweet	No
	Kandamur ..	96	Nellore	All weather	Yes	273	Normal	N.A.	No

South Mopur	97	Nellore	All weather	Yes	304	Normal	N.A.	No
Venkatachelem	98	Kurichedu	Fair weather	Yes	450	Poor	60, sweet	No
Naidupalam	99	Kurichedu	No road	Yes	500	Poor	60, sweet	No
Timmayapalem	100	Kurichedu	Fair weather	Yes	1,110	Poor	60, sweet	No.
Narasimhynayanipalem	101	Donkonda	No road	Yes	500	poor	60, sweet	No
Paddanapalem	102	Donkonda	No road	Yes	250	Poor	60, sweet	No
Polavarum	103	Ongole	No road	Yes	250	Poor	60, sweet	No
Gudipadu	104	Donkonda	No road	Yes	1,050	Poor	60, sweet	No
Boddipurapadu	105	Ongole	No road	Yes	1,480	Poor	60, sweet	No
Mannepalli	106	Ongole	No road	Yes	400	Poor	60, sweet	No
Manginapudi	107	Gajjalkonda	No road	Yes	750	Poor	60, sweet	No
Rudrasamudram	108	Dorakuda	No road	Yes	1,500	Poor	60, sweet	No
Bhumanapalli	109	Gajjalakond	No road	Yes	500	Poor	60, sweet	No
West Vearayapalem	110	Kurichedu	No road	Yes	300	Poor	60, sweet	No
Kurichidu	111	Kurichedu	No road	Yes	340	Poor	60, sweet	No
Kallur	112	Kuricheda	No road	Yes	250	Poor	60, sweet	No
Badapuram	113	Donakonda	No road	Yes	420	Poor	45, sweet	No
Aravallipadu	114	Donakonda	No road	Yes	390	Poor	60, sweet	No
West Khambhampadu	115	Donakonda	No road	Yes	250	Poor	12, sweet	No
Bandiveligandla	116	Kuricheda	No road	Yes	320	Poor	12, sweet	No
Alavalpadu	117	Kuricheda	No road	Yes	250	Poor	12, sweet	No
Cheruvukommupalem	118	Kuricheda	No road	Yes	1,335	Poor	60, sweet	No
East Veerayapalem	119	Kuricheda	No road	Yes	1,335	Poor	60, sweet	No
Brindavanam	120	Kuricheda	No road	Yes	520	Poor	45, sweet	No
Avulamanda	121	Kuricheda	No road	Yes	350	Poor	60, sweet	No
Pothakamur	122	Kuricheda	No road	Yes	1,453	Poor	60, sweet	No
Mustalagangavaram	123	Kuricheda	No road	Yes	450	Poor	60, sweet	No
Ragamakkapalli	124	Gujjalakonda	No road	Yes	650	Poor	60, sweet	No
Pochamakkapalli	125	Kuricheda	No road	Yes	400	Poor	60, sweet	No
Darsi	126	Kuricheda	No road	Yes	610	Poor	60, sweet	No
Jagannathapuram	127	Kuricheda	No road	Yes	300	Poor	60, sweet	No
Zamminguntalli	128	Kuricheda	No road	Yes	300	Poor	60, sweet	No
Ramapuram	129	Darsi	No road	Yes	250	Poor	60, sweet	No
Potlapadu	130	Kuricheda	No road	Yes	250	Poor	60, sweet	No
Tanamchintala	131	Kuricheda	No road	Yes	300	Poor	60, sweet	No
Davaram	132	Kuricheda	No road	Yes	1,000	Poor	60, sweet	No
Kocherlakota	133	Donakonda	No road	Yes	1,200	Poor	60, brackish	No
Indlackeruvu	134	Gajjalakonda	No road	Yes	1,500	Poor	60, brackish	No
Lakshmipuram	135	Donako nda	No road	Yes	350	Poor	60, brackish	No
Ganeshwapuram	136	Kuricheda	No road	Yes	250	Poor	60, brackish.	No

APPENDIX F—*contd.*

District	Name of block	No. of block	Nearest Rly. Station	Whether accessible by fair all weather road	Whether included in C.D. Block	Area (acres)	Amount of rain-fall (inches)	Depth and nature of sub-soil water	Endemic disease
Nellore—*contd.*	Veerapalli ..	137	Donakonda	No road	Yes	350	Poor	60, brackish	No
	Allurpot & Singhpet	138	Allur Road	Fair weather	No	4,782	30	12, sweet	No
Hyderabad	Gopanpalli ..	139	Lingamapalli	All weather	Yes	1,270	35-40	25, sweet	No
	Kukatpally ..	140	Sanatnagar	No road	Yes	930	40	36, sweet	No
	Mehboobpet ..	141	Lingamapalli	Fair weather	Yes	260	40	36, sweet	No
	Madhapur ..	142	Sanatnagar	Fair weather	Yes	678	35	36, sweet	No
	Yurafguda ..	143	Begumpet	All weather	No	819	35	36, sweet	No
	Shabnagarkurd ..	144	Hayatnagar	All weather	Yes	350	25	36, sweet	No
	Malkajgiri ..	145	Ramakrishnapoor	Fair weather	Yes	330	30	36, sweet	No
	Kankammadi ..	146	Hyderabad	All weather	Yes	369	27	N.A.	No
	Chandanvelli ..	147	Omdanagar	Fair weather	Yes	1,150	27	N.A.	No
	Malkaram ..	148	Omdanagar	Fair weather	Yes	554	27	N.A.	No
Karminagar	Rangampet ..	149	Kannavareddy	Fair weather	Yes	250	33	N.A.	No
	Nimmagudem ..	150	Paddapak	No road	No	250	35	30	No
	Polaram ..	151	Paddapak	No road	No	250	35	20	No
	Kapuram ..	152	Paddapak	No road	Yes	500	35	20	No
	Edlapalli ..	153	Paddapak	No road	Yes	250	35	20	No
	Shahrajpalli ..	154	Paddapak	No road	Yes	250	35	35	No
	Arenda ..	155	Paddapak	All weather	Yes	250	35	35	No
	Kishtopoor ..	156	Paddapak	No road	No	250	35	30	No
	Jeelapalli ..	157	Paddapak	No road	No	250	35	36	No
	Singampalli ..	158	Paddapak	No road	No	250	35	30	No
	Morepalli ..	159	Paddapak	No road	No	250	35	33	No
	Mutharam ..	160	Paddapak	No road	No	500	35	36	No
	Yamanpok ..	161	Paddapak	No road	No	250	35	36	No
	Reddypolli ..	162	Paddapak	No road	No	500	35	33	No
	Mullugpolli ..	163	Paddapak	No road	No	250	35	30	No
	Kisharaopet ..	164	Paddapak	No road	No	250	35	30	No
	Vallaimkunta ..	165	Paddapak	No road	No	250	35	30, sweet	No
	Veerapoor ..	166	Paddapak	No road	No	250	35	35, sweet	No
	Raichapalli ..	167	Nizamabad	No road	No	905	35	52, sweet	No
	Bennapalli ..	168	Nizamabad	No road	No	737	35	52, sweet	No

	Veinpalli ..	169	Nizamabad	No road	No	520		35	52, sweet	No
	Theagalalli ..	170	Nizamabad	No road	No	261		35	52, sweet	No
	Mootapalli ..	171	Nizamabad	No road	No	300		35	52, sweet	No
	Mortapokan ..	172	Nizamabad	No road	No	300		36	52, sweet	No
	Charlapalli ..	173	Nizamabad	No road	No	1,954		35	52, sweet	No
Anantapur	Thimma Samudram	174	Anantapur	No road	No	659		20	20-25, sweet	No
	Thimasamudram ..	175	Anantapur	No road	No	796		20	20-25, sweet	No
Chittoor	Goddanvaripalli ..	176	Kalikiri	All weather	Yes	633		28	24, sweet	No
Khammam	Kistaram ..	177	Bhaddrachalam	Fair weather	Yes	890		36	— sweet	No
Nalgonda	Anneparthi ..	178	Bhongir	All weather	No	440		32	24-36, sweet	No
	Pagidimarri ..	179	Bhongir	No road	Yes	348		34	24-36, sweet	No
	Chittoor ..	180	Bhongir	No road	Yes	281		32	24-36, sweet	No
	Nereadlappally ..	181	Jadcherla	No road	Yes	316		30	26—36, sweet	No
	Vavilkole ..	182	Jadcherla	All weather	Yes	300		30	26—36, sweet	No
	Gobeinabally ..	183	Jadcherla	No road	Yes	280		30	26—36, sweet	No
	Velchal ..	184	Khammammet	No road	No	318		30	26—36, sweet	No
	Pillaipalli ..	185	Pibinagar	No road	Yes	542		24	26—36, sweet	No
	Addagudar ..	186	Jangam	Fair weather	No	561		30	26—36, sweet	No
Mahboob-nagar	Chintal' ..	187	Ghadwal	No road	Yes	570		22	56—60 sweet	No
	Kodparthy ..	188	Jadeperla	Fair weather	No	308	N.A.		36, sweet	No
	Kodparthy ..	189	Jadeperla	Fair weather	No	339	N.A.		36, sweet	No
	Kodparthy ..	190	Jadcherla	Fair weather	No	760	N.A.		37, sweet	No
	Mamidimader ..	191	Jadeperla	Fair weather	No	466	N.A.		37, sweet	No
	Shainpally ..	192	Jadeperla	Fair weather	No	460	N.A.		35, sweet	No
	Shainpally ..	193	Wanaparthy	Fair weather	No	516	N.A.		38, sweet	No
	Shainpally ..	194	Eanaparthy	Fair weather	No	353	N.A.		38, sweet	No
	Allipur ..	195	Wanaparthy	Fair weather	No	654	N.A.		38, sweet	No
	Polkapahad ..	196	Jadcherla	Fair weather	No	532	N.A.		36, sweet	No
	Polkapahad ..	197	Wanaparthy	Fair weather	No	334	N.A.		36, sweet	No
	Nagpurur ..	198	Wanaparthy	Fair weather	No	293	N.A.		37, sweet	No
	Mannanur ..	199	Wanaparthy	Fair weather	No	445	N.A.		36, sweet	No
	Kottur ..	200	Jadcherla	Fair weather	No	432	N.A.		35, sweet	No
	Sirsawada ..	201	Jadcherla	Fair weather	No	277	N.A.		36, sweet	No
Kurnool	Rudaravaram ..	202	Nandyal	Fair weather	Yes	382	15—20		20—30, brackish	No
	Alamur ..	203	Nandyal	Fair weather	Yes	556	15—20		20—30, brackish	No
	Takingamadinne ..	204	Nandyal	Fair weather	Yes	1,510	15—20		20—30, brackish	No
	Mutyalapad ..	205	Nandyal	Fair weather	Yes	365	15—20		24—30, sweet	No
	Narsapuram ..	206	Nandyal	Fair weather	Yes	453	15—20		20—30, sweet	No
	Mutukula ..	207	Vinukonda	All weather	Yes	1,120	10—15		25—35, sweet	No
	Sathakodu ..	208	Vinukonda	All weather	Yes	1 167	10—20		25—30, sweet	No

APPENDIX F—*concld.*

District	Name of block	No. of block	Nearest Rly. Station	Whethe accessible by fair/all weather road	Whether included in C.D. Block	Area (acres)	Amount of rain-fall (inches)	Depth and nature of sub-soil water	Endemic disease
Kurnool—*contd.*	Wakatripurvaram	209	Vinukonda	All weather	Yes	2,299	10—20	20—35, sweet	No
	Pullalacheruva ..	210	Vinukonda	All weather	Yes	1,057	10—20	25—30, sweet	No
	Eachakonda ..	211	Vinukonda	Fair weather	Yes	369	10—20	25—35	No
	Endrapalli ..	212	Markapur	Fair weather	Yes	627	10—20	25—35	No
	Ganapavaram ..	213	Markapur	Fair weather	Yes	1,255	10—20	20—30	No
	Medapi ..	214	Vinukonda	All weather	Yes	863	10—15	20—25	No
	Miriam Palli ..	215	Markapur	Fair weather	Yes	266	10—20	20—25	No
	Kanakalavapalli ..	216	Markapur	Fair weather	Yes	4,549	10—20	20—30	No
	Tripurantakam ..	217	Vinukonda	Fair weather	Yes	973	10—20	20—30, sweet	No
	Mettapalem ..	218	Markapur	Fair weather	Yes	282	10—20	20—35, sweet	No
	Viswaradhapuram	219	Markapur	All weather	Yes	346	10—20	25—30, sweet	No
	Kumbhampad ..	220	Markapur	All weather	Yes	394	10—20	20—30, sweet	No
	Guirijopalli ..	221	Markapur	All waether	Yes	377	10—20	20—35, sweet	No
	Venkatadripalem ..	222	Markapur	All weather	Yes	890	15—20	20—30, sweet	No
	Gurrapusala ..	223	Markapur	Fair weathr	Yes	2,442	10—20	20—30, sweet	No
	Amarigudipad ..	224	Markapur	All weather	Yes	1,219	10—20	20—30, sweet	No
	Tangiralapalli ..	225	Markapur	All weather	Yes	788	10—20	20—30, sweet	No
	Mallapeta ..	226	Markapur	Fair weather	Yes	1,166	10—20	20—30, sweet	No
	Peddayachavaram	227	Markapur	Fair weather	Yes	963	10—20	20—30, sweet	No
	Sanikanaram ..	228	Markapur	Fair weather	Yes	285	10—20	20—30, sweet	No
	Chinna Dornal ..	229	Markapur	Fair weather	Yes	358	15—20	20—30, sweet	No
	Peeda Bommalapuram	230	Markapur	Fair weather	Yes	962	10—20	20—30, sweet	No
	Ayyanamukkala ..	231	Markapur	Fair weather	Yes	1,183	10—20	20—30, sweet	No
	Yedtalli ..	232	Markapur	Fair weather	Yes	279	15—20	20—25, sweet	No
	Kolabhumunipad ..	233	Markapur	Fair weather	Yes	813	10—20	25—30, sweet	No
	Badeed ..	234	Markapur	Fair weather	Yes	347	10—20	25—30, sweet	No
	Pedda Araveed ..	235	Markapur	Fair weather	Yes	264	10—20	20—30, sweet	No
	Thippayapalem ..	236	Markapur	Fair weather	Yes	258	10—20	20—30, sweet	No
	Yugoohacherlopallo	237	Markapur	Fair weather	Yes	1,610	15—20	20—35, sweet	No
	Nallagantla ..	238	Markapur	Fair weather	Yes	1,044	15—20	20—30, sweet	No
	Thokapalli ..	239	Markapur	Fair weather	Yes	486	10—20	20—30, sweet	No
	Reddicherla ..	240	Giddalpur	Fair weather	Yes	274	10—20	20—30, sweet	No
	Bukkapuram ..	241	Veldurthi	Fair weather	No	2,317	10—20	50—60,	No

Golliagut	242	Betamcherla	Fair weather	No	557	10—20	50—60	No
Gutupalli	243	Rangapuram	Fair weather	No	1,557	10—20	30—40	No
Kolumulapalli	244	Botamcherla	Fair weather	No	254	10—12	30, sweet	No
Nareducherla	245	Rayalchervu	Fair weather	Yes	272	10—20	25—35, sweet	No
Muddavaram	246	Betamcherla	Fair weather	No	869	10—20	60, sweet	No
Emboy	247	Betamcherla	Fair weather	No	409	10—25	50, sweet	No
Gudipad	248	Gooty	Fair weather	Yes	529	10—20	25—35, sweet	No
Bugganapalli	249	Bugganapalli	Fair weather	No	505	10—15	50—60, sweet	No
Kalugotla	250	Veldurthi	Fair weather	No	997	10—12	30—40, sweet	No
Krishnagiri	251	Veldurthi	Fair weather	No	642	10—20	40—56, sweet	No
Akaveed	252	Giddalore	Fair weather	Yes	577	10—20	20—30, sweet	No
Cheenampalli	253	Tuggali	Fair weather	No	695	10—20	24—30, sweet	No
Billekal	254	Tuggali	Fair weather	Yes	289	15—20	20—30, sweet	No
Kotaponda	255	Tuggali	Fair weather	Yes	468	15—20	20—30, sweet	No
Karumanchi	256	Tuggali	Fair weather	Yes	399	15—22	15—25, sweet	No
Galichennayalem	257	Nandyal	Fair weather	Yes	289	15—22	15—25, sweet	No
Chindukur	258	Nandyal	Fair weather	Yes	1,837	15—22	25—40, sweet	No
Rollapadu	259	Kurnool	Fair weather	Yes	943	10—22	20—30, sweet	No
Tangedancha	260	Kurnool	Fair weather	Yes	1,600	15—22	20—30, seeet	No
Bollavaram								
Chintapalli	261	Kurnool	Fair weather	Yes	1,310	15—20	20—30, sweet	No
Sunkesul	262	Kurnool	Fair weather	Yes	479	15—22	20—25, sweet	No
Tudicherla	263	Kurnool	Fair weather	Yes	2,157	15—22	20—30, sweet	No
Nagalooti	264	Kurnool	Fair weather	Yes	894	10—20	20—30, sweet	No

APPENDIX G

Model Scheme for settlement of landless labourers particularly the Scheduled Castes and the Scheduled Tribes on a co-operative basis in the wastelands located in Andhra Pradesh

A model scheme for settling co-operatively landless labourers, particularly the members of the Scheduled Castes and the Scheduled Tribes, on the wastelands found in Andhra Pradesh has been formulated. It is not a rigid scheme, and the details may be varied to suit the local conditions.

The co-operative method of organisation can be applied in settlement work in the following manner:—

(1) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members; and

(2) Land may be owned individually, but jointly operated (i.e., Co-operative Joint Farming).

In organising the societies, the viability and mutual knowledge and confidence which strengthen the co-operative character should receive due weight. The broad outlines of these patterns are indicated below.

Pattern I: Individual farming with the help of service co-operatives

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It should be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the Society. The co-operative society caters to the needs of the members such as credit for agricultural production and supplies of agricultural requisites like fertilisers, improved seeds, insecticides etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land—The unit of land to be allotted to each settler will be 2½ acres of wet land or 10 acres of dry land. The allottees will have the right to alienate their lands only after they pay back all the advances made to them by the Government. As the lands are not initially fit for cultivation and will entail expenditure on reclamation, the land revenue may be charged as follows:—

1st Year—No land revenue.

2nd year—⅓ of the assessed land revenue.

3rd year—2/3 of the assessed land revenue.

4th year and onwards—Full land revenue.

It should be obligatory on the part of the allottee to cultivate the land himself or with the help of his family members.

Method of working—Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 25 per member. This amount will be repayable in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the members concerned as and when needed. The society, if desired by the members, may also provide domestic requirements against their deposits.

One Agricultural Officer will supervise the work of a group of 5 societies. He will assist each society in drawing up a production plan, and all the agricultural operations should be carried out by the members in accordance with the plan. The society will supply fertilisers, improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society, which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

Social amenities:

(i) *Homestead*—About 1/6th of an acre of land may be allotted as a homestead plot. The value of the plot is estimated at Rs. 25.

(ii) *House building*—A sum of Rs. 1,000 may be advanced to each family towards the cost of building a house.

(iii) *Provision of drinking water*—One drinking water well with a hand pump may be provided for 25 families. The cost of the two wells with pumps will be Rs. 6,000, and the average cost per family will come to Rs. 120.

(iv) *School*—For a colony of 50 families, a school may be provided. The Education Department of the State will provide funds for this purpose.

(v) *Dispensary*—Provision for a dispensary may be made for each colony. The Medical Department will provide funds for this purpose.

Reclamation charges—The average cost of reclaiming the land will be about Rs. 150 per acre. Since the unit of allotment is 10 acres in case of dry lands, the average cost will be Rs. 1,500 per family.

Follow-on cultivation charges—A sum of Rs. 1,000 will be required for meeting the cultivation charges on rainfed crops.

Rs. 1,000 may be provided per family for a pair of bullocks, a bullock cart, etc.

Maintenance expenditure—During the first few years when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. The schedule of payment for each family may be worked out on the basis of a means test. Provision for maintenance charges of Rs. 500 may be made for a period of one year.

Administrative set-up—A sum of Rs. 50 (one Manager on Rs. 100 p.m. plus D.A. and one-fifth the pay of Agricultural Officer at Rs. 200 p.m. plus D.A. Approximately, Rs. 2,500 for each colony) will be spent per family towards the administrative set-up.

To sum up, the details of expenditure per family on the various items will be as under:—

	Rs.
(1) Value of land	1,500
(2) Social amenities	1,145
(3) Reclamation charges	1,500
(4) Follow-on cultivation	2,000
(5) Maintenance expenses	600
(6) Administrative set-up	50
Total	6,795

Pattern of assistance—Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as follows:—

	Loan Rs.	Grant Rs.
I. *Individual members*—		
(*a*) Share capital	25	..
(*b*) Homestead plot and house	1,025	..
Total	1,050	..
II. *Through co-operative society*—		
(*a*) Drinking water supply	..	120
(*b*) Reclamation charges	..	1,500
(*c*) Maintenance expenses	600	..
(*d*) Follow-on cultivation—		
(*i*) Bullocks and implements	1,000	..
(*ii*) Cultivation charges	1,000	..
(*e*) Administrative set-up	..	50
Total	2,600	1,670

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The loans for cultivation charges will be interest-free and recoverable one year after the harvest. The loans for bullocks, equipment, etc., should be recovered from the third year in 5 annual instalments with the rate of interest as for *taccavi* loans. The loans for the homestead plot and house building should be recovered from the 5th year in 15 annual instalments with the rate of interest as for *taccavi* loans. The occupancy price of land should be paid from the 6th year in 5 annual instalments.

Pattern II: Individually owned but jointly operated

The co-operative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land—The scale of allotment of land to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

Method of working—The society will formulate the production plan through its elected Managing Committee. The Managing Committee may formulate the day-to-day working plan for the members either by forming some special groups or on an *ad hoc* basis. The means of cultivation, i.e., seeds, fertilizers, implements, bullocks, etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidy received from the Government towards the wages on labour, maintenance charges etc. would be availed of for this purpose. The crops would be jointly harvested and the income would be disbursed among the members after deducting the expenditure incurred by the society. The Agricultural Officer attached to a group of 5 societies will provide the necessary technical guidance with regard to the formulation of the production programme, the use of fertilizers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the society will keep the necessary accounts, etc.

The social amenities, reclamation charges, follow-on cultivation charges, maintenance expenditure and administrative set-up for the organisation of this scheme will be the same as in Pattern I.

This pattern will also facilitate undertaking of the follow-on cultivation.

Pattern of assistance—All the assistance, except loans for homestead and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

APPENDIX H

(Extracts from Shri M. P. Pai's note on "Small Scale Agriculture in Britain")

Land Settlement Association Limited

Quite the most interesting part of the programme was visits to farms run by the Land Settlement Association Limited. This experiment in what might be called compulsory co-operative farming. which is now 12 years old and has shown remarkable success and vitality, has a topical interest for us in this country. The Land Settlement Association originated as a Friendly Society in 1934 with the object of conducting experiments to rehabilitate the unemployed on the land. At the beginning of the 1939 War, unemployment disappeared and vacant holdings were then let to applicants, who had either agricultural or horticultural experience, though this was by no means a hard and fast rule. Holdings are at present let to selected applicants, who have had at least 5 years' experience on the land and sufficient capital, but here again there is no hard and fast rule. The main purpose of the scheme is to make it possible for an agricultural worker with limited capital to obtain a holding under conditions which will enable him to earn a satisfactory living under British conditions. All holdings are designed to provide a full-time occupation with pigs, poultry and horticulture, including Hot House. Horticultural Holdings vary from 2 to 10 acres, but are generally about 4 acres in extent. There are 18 such colonies with about 50 farms in each. Each farm is intended to be run by the farmer and his wife, and an adult child or two. They are not intended for dairy farming which is one of the more prosperous lines of farming in the United Kingdom, since a dairy farm needs about an acre per cow and mechanisation is uneconomic with less than 20 cows. Besides, land is scarce in the United Kingdom. Cropping on the small farms of the L.S.A. is normally directed to intensive horticulture with some market gardening and agricultural cropping. The main crops are vegetables (like tomatoes, cabbages and cauliflowers and sometimes potatoes), soft fruit (like goose berries and straw-berries) and flowers (like Tulips and Chrysanthemams). Mixed production based on pigs and poultry, in addition to horticulture is the normal aim, though many of the farms have neither pigs nor poultry. Each small holding has a really good house with three and in some cases four bed-rooms and with electricity, power and water laid on. (Most modern conveniences are available including frigidaires, radios and T.V. but these are private property or hired). On all holdings, there is a heated glass house generally 60 feet × 25 feet. Other equipment varies according to the need for piggeries, hen houses and so forth. These belong to the tenants and are sold by them when a holding changes hands. The rent of a holding (which includes the house) is on the average £75. Holdings are in groups of about 50 farms on each such estate, of which there are 18 all over the country. There are facilities for social needs like a community hall and adult education.

Aims and Objects

In general, the object of the Association is:

(1) To relieve the producer of the problems of management, so that he is free to devote his whole time to production;

(2) To provide services that it would be un-economical for each individual to provide for himself, thus to ensure that the producer's working capital is not tied up by purchase of equipment etc., which a farm cultivating 4 or 5 acres cannot reasonably afford; and

(3) To provide technical assistance and market information on the spot.

Centralised Services

In order to secure the advantages of bulk trading, buying and selling are organised centrally by the Association. In each Estate, there is a central packing station where the tenants' produce is graded, packed and sent to market in the Estate's own lorries. The Society's grading is accepted without question in the markets. There is a central store from which the farmer buys all his equipment and supplies like manures, cattle-feed, seeds and tools etc. A propagating service provides plants, especially tomato plants. A service department supplies implements and labour for casual horticultural requirements at reasonable cost. Pedigree pigs and hatching eggs are also available at fair prices. The Estate's storage facilities are available when needed, but in practice produce is picked early in the morning or the previous day, graded and sent to the market in the Estate's transport the same day. Picking and harvesting are done to a fixed programme, so that grading facilities, and packing and transport are ready when the produce arrives.

Management and Financial Aspects

To ensure that all tenants take part fully in these arrangements, it is made a condition of tenancy that most buying and selling must be done through the Association. Some individual selling is permitted e.g. when there is a difference of view as to the best time to sell. Some irregular direct selling occasionally occurs, but this is severely discountenanced, and if fraudulent, punished. Each tenant needs a working capital of between £1,500 and £2,000. Upto three quarters of this is made available at low rates of interest by the Ministry of Agriculture. Capital is required mainly for purchase of pigs, poultry, feeding stuffs, seeds, manures and fuel for the glass house etc. Expensive machinery is generally owned and hired by the Estate.

On each Estate, there is a resident Estate Manager with experienced staff who can be consulted by the tenants on all their problems. The costs of this staff, and *in fact all* costs are borne by the estate *viz.* by the farmers themselves. The Association keeps all the tenants' accounts and relieves them of anxiety in this respect. The farmer is left free to produce: all other work is taken over by the staff of the Estate, but he has a large say in the running of the Estate. Staff in the grading shed and for the transport side is employed by the Estate at the cost of the Estate *viz*: the farmers. Dependants of the farmers are preferred for employment.

Tenants have their own elected delegates both on the Managing Committee of the Estate as also at the National level on the Managing Committee of the Land Settlement Association itself. They frequently meet the paid managers from time to time to discuss matters of common interest and to agree on policy, particularly on cropping patterns. Co-operation on a compulsory basis is thus the basis of the Association. None of the land is owned by the farmer, and he is not allowed to buy his farm, any one who wishes to own a farm should save out of his profits and buy one elsewhere. This happens now and then.

The selection of tenants on each estate is made by a panel of four including a representative of the Land Commissioner, the Manager of the Estate and 2 elected tenants. This panel also makes recommendations for termination of tenancy when a tenant breaks his agreement in any respect.

Sales by the Association have crossed £250,000 (Rs. 3.5 crores) per year and the average net-profits per farm after meeting all expenses, including the wages of the farmer's wife, but not his own. have risen from £715 in 1954 to over £900 in 1960. A few incomes of as much as £2.500 are known and reflect the ability of the particular farmer to produce good or heavy crops. The association has now built up reserves of nearly £100,000, whilst the savings invested by the farmers were more than £1,000 per farmer in 1958.

Compulsory or Voluntary Co-operative Farming

The scheme offers considerable fruit for thought on the possibility of adaptation to Indian conditions. Its working has been examined by the Press in England, which is of the view that the secret of its success lies preponderently not so much in its first object of relieving the procedure of the problems of management, as in its second object of providing services, much of which would be uneconomical for each individual to provide for himself. What it amounts to is that in each group of holdings, the central estate by providing numerous services relieves the farmer of the necessity of investing his small capital in any services. This is just what a true farming co-operative should do. Besides, while a service co-operative is a loose association of farmers, who invest capital in a trading concern in order to get favourable buying and selling terms, the Land Settlement Societies do really organise production and provide the advantages of the technical services of competent paid staff. They are each a small community of farmers with a common interest bound together in a small enough organisation to work as a team. The 50 farmers and four or five specialists have close mutual ties, and their success lies in the heavy yields, sound marketing, and wise use of common funds and services. I was told that it has never been found necessary for the Central Board to interfere in any decision of the local Committees of each of the farms.

I had a long discussion with its Chairman, Sir Arthur Richmond, who has played a leading part in the growth of the Association to its present development and to whose wise leadership and sound judgement, its success is principally due. He offered the fullest assistance, should such a scheme be sought to be set up in this country.

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REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART V—ANDHRA PRADESH

WASTELANDS SURVEY AND RECLAMATION
COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
GOVERNMENT OF INDIA

FEBRUARY, 1961

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories:—

(a) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(b) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June 1959, (Appendix A) with the following terms of reference:—

(i) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(ii) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(iii) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(iv) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

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Programme of work

4. The Committee held its first meeting on the 7th July 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, viz., Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under:—

(i) forests;
(ii) barren and unculturable lands;
(iii) land put to non-agricultural uses;
(iv) permanent pastures and meadows;
(v) areas under miscellaneous trees and crops;
(vi) culturable waste;
(vii) current fallows;
(viii) fallows other than current fallows; and
(ix) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casurina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, viz., "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable waste lands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head "culturable waste" can serve

but little purpose unless detailed information on the types of waste lands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of waste lands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PART V

Andhra Pradesh

Preface

The Report deals with the availability and location of waste lands in large-sized blocks in the State of Andhra Pradesh and the measures to be taken for their reclamation.

2. With a view to gaining some knowledge of the wastelands found in the State, we undertook a tour of the Krishna, Guntur and Nalgonda districts, from the 26th to 29th April 1960. On the 26th April 1960, the Committee had discussions at Vijayawada with the District Collector, Krishna, on the problems of reclamation and the provision of irrigation for the wastelands of the Krishna district. On the 30th January 1961, the draft report of the Committee relating to the State was discussed and finalised.

3. We wish to express our gratitude to Shri Syed Nurul Hasan Jafri, Deputy Secretary to the Government of Andhra Pradesh, who, in his capacity as Liaison Officer, furnished the data required by the Committee, and made suitable arrangements in connection with the tours of the Committee in the State.

4. We are highly indebted to Dr. S. P. Raychaudhuri, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities at the cartographic laboratory of the Institute in printing the maps included in the Report.

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PART V

ANDHRA PRADESH

SECTION A

(GENERAL ASPECTS)

General aspects

The State of Madhya Pradesh which is the largest State **in India, is** divided into 43 districts, *viz.*, Bhind, Morena, Gwalior, Datia, Shivpuri, Guna, Mandsaur, Ratlam, Ujjain, Jhabua, Dhar, Indore, Dewas, West Nimar, East Nimar, Rajgarh, Shajapur, Vidisha, Sehore, Raisen, Hoshangabad, Betul, Sagar, Damoh, Narasimhapur, Jabalpur, Mandla, Chhindwara, Seoni, Balaghat, Tikamgarh, Chattarpur, Panna, Satna, Rewa, Sidhi, Shahdol, Raipur, Sarguja, Bilaspur, Raigarh, Durg, Raipur and Bastar. The total geographical area of the State is 1,71,052 sq. miles.

2. The total population of Madhya Pradesh, according to the 1951 census, was 2,60,71,637, which gives an average density of 152 persons per square mile, as against 287 persons for the country as a whole. The rural population forms 80 per cent of the total population of the State.

3. Based on the physical features, the State can be broadly divided into the following five principal divisions:—

(i) Northern dry region,
(ii) Malwa plateau,
(iii) Narmada Valley,
(iv) Satpura ridge, and
(v) Chhattisgarh plains.

4. The Northern dry region comprises lowlying areas around Gwalior and to the north and north-east of it, extending thence into Bundhelkhand of which it includes the greater part until it meets the Kaymore hills in Baghelkhand. The area of this tract is about 18,000 sq. miles.

5. The Malwa plateau covers most of Malwa, the wide table-land with a mean elevation of 1,600 ft. above sea-level. It has an area of about 34,600 sq. miles. It includes all the tract lying between the great Vindhya barrier which forms the northern part of the Narmada Valley, and the point just south of Gwalior.

6. The Narmada Valley is a long and narrow strip along the Narmada, walled in by the Vindhyas to the north and the Satpuras to the south, and extends over 200 miles from Jabalpur to Handia with an average width of 20 miles.

7. The Satpura ridge situated south of the Narmada Valley stretches across the State in the shape of a large triangle, its eastern face textending over 100 miles from Amarkantak to Saletekdi in the Balaghat district, and its sides running westwards for about 400 miles and gradually meeting in Nimar. The general elevation of the Satpura ridge is 2,000 ft., but several of its peaks rise to 3,000 ft., and a few to more than 4,000 ft. The Satpuras form the western watershed of the plains lying north and south of them.

8. The Chhatisgarh plains extend along the eastern face of the Satpura range.

9. The Vindhyas and Satpura are the two parallel ranges running west to east through the middle of the State. The main river systems are the Chambal, Betwa, Sone, Narmada, Tapti, Mahanadi and Indrawati.

10. A large part of Madhya Pradesh receives a rainfall of 30 to 60 inches. It is only in the Bastar, Surguja and Balaghat districts that the rainfall exceeds 60 inches. In the Malwa plateau, the rainfall varies from 30 to 45 inches, but it is well distributed and even in areas receiving a rainfall of 30 inches, crop failures are rare. The northern districts of Morena, Bhind, Gwalior and Datia form the dry zone, receiving less than 30 inches of rainfall. In general, the rainfall decreases from south-east and east to north-west and west. The climate is, therefore, wet and humid in the Chhattisgarh plains, temperate in the Malwa plateau, and dry in the Northern zone.

11. High summer temperatures are recorded during April-May. During the monsoon period from June to October, temperature ranges from 80°F. to 100°F. In the could season, the minimum temperatures range from about 45°F. to 85°F., and the maximum from 70°F. to 85°F.

12. The soils of Madhya Pradesh can be classified into alluviums, black soils, mixed red and black soils, red and yellow soils, and skeletan or gravelly soil (*vide* Map I). A brief description of these soils is given below:

12.1. The alluvial soils of the State belong to the Indo-Grangetic alluvium, and are found in the districts of Morena, Bhind and Gwalior. They are fairly rich in potash, but poor in nitrogen, phosphorus and organic matter. Their reaction is neutral to slightly alkaline, and they are low in total soluble salts. Lime concretions are present at lower depths. In a few places near Mehgaon and Gohad (Bhind district), saline and alkaline patches have developed with high ground-water table. About five million acres, representing 4·6 per cent of the total area of the State, are covered with alluvial soils. A variety of crops such as rice, wheat, sugarcane, gram and millets, are grown.

12.2. Black soils occupy almost half the area of the State, and occur in the Malwa plateau, the Narmada Valley and the Satpura range. They vary in depth, and are usually loam to clay in texture. Lime concretions are invariably present. On drying, these soils have a tendency to develop deep fissures during the summer. They are poorly supplied with phosphorus, nitrogen and organic matter, but have adequate reserves of potash and lime. They are suitable for wheat and cotton cultivation, and other crops like jowar, groundnut and sugarcane also grow well. These soils are further sub-divided into deep black soils, medium black soils, and shallow black soils.

12.2.1. Deep black soils occur over large parts of the Narmada Valley, and level portions of the Vindhya and Satpura plateaus, especially in the Hoshangabad and Narsimahpur districts. The clay content of these soils varies from 20 to 60 per cent. They are further sub-divided into black, dark brown, coarse brown, mixed, and sandy soils. They are very suitable for wheat cultivation.

12.2.2. Medium black soils cover the largest area under black soils, and are found in the Malwa plateau and the Nimar region, and extend up to the Sidhi district along the northern side of the Vindhya range. In the Nimar Valley a mixture of black and alluvial soils is found. These are easily managed, and give high crop yields. In the south-western districts of Jhabua and Dhar and the neighbouring hilly areas, the soils show great variations and give a mosaic appearance of different types. Medium black soils are prone to sheet and drill erosion, and soil and water conservation measures are necessary for the successful cultivation of crops. These soils are suitable for wheat, cotton, groundnut, sugarcane and jowar.

12.2.3. Shallow black soils mainly cover the Satpura range, comprising the districts of Seoni, Chhindwara and Betul. They are shallow clay loams with 15 to 30 per cent. clay. The important crops grown in these soils are paddy, wheat, gram, cotton and jowar.

12.3. Mixed red and black soils are prevalent in the eastern part of the Northern region, in the Rewa, Satna, Panna, Chhatarpur, Tikamgarh and Datia districts, and part of the Shivpuri district. Red and black soils usually alternate in these areas. Red soils are light-textured and devoid of lime concretions and free carbonates. A common form of these soils is a sandy clay, which differs in depth and fertility and produces a large variety of crops under irrigation. They are generally deficient in nitrogen, phosphorus, organic matter and lime.

12.3.1. Mixed red and black soils are further sub-divided as follows:—

(i) Black clayey soils which are retentive of moisture and produce good crops of wheat and jowar.

(ii) Less dark and clayey soils which are suitable for growing wheat and gram.

(iii) Light medium deep soils of yellow colour, suitable for growing *kharif* crops.

(iv) Shallow, gravelly red soils of poor quality. Usually bajra, jowar, til, etc., are cultivated in these lands.

(v) Alluvial soils in the beds of rivers like the Sone, suitable for growing paddy.

12.3.2. Mixed red and black soils cover over 10 million acres. These lands are suitable for the cultivation of both *kharif* and *rabi* crops. The crops usually grown are paddy, wheat, barley, gram, jowar, linseed, *til*, etc.

12.4. Red and yellow soils are found in the Chhattisgarh plains, comprising the Balaghat district, and part of the Raigarh, Surguja and Bastar districts. The soils are light and sandy in texture, though medium and clayey soils are also found. The soils are deficient in nitrogen, phosphorus and humus. These soils are suitable for rice cultivation.

12.4.1. In the Durg, Balaghat, Bilaspur and Raipur districts, deep clayey soils with limestone, yellow sandy loam soils, and a mixture of these two soils of medium texture are found under the local names of *Kankar, Dorsa, Matasi* and *Batta*. In agronomic trials conducted in the Raipur district, high responses of paddy to nitrogenous and phosphatic fertilizers were obtained.

12.5. Skeletal or gravelly soils consist of stony uplands of the Vindhya and Satpura ranges, and cover parts of the districts of Shahdol, Mandla, Surguja, Raigarh, Bastar and Jhabua. Inferior millets and oilseeds are grown in these soils.

13. The important crops grown in the different soil zones are as under:—

Soil Zone	*Crops*
Alluvial soil	Paddy, wheat, barley, jowar, bajra, gram, sugarcane and arhar (*Cajanus cajan*).
Black soils (deep, medium and shallow black soils). . .	Cotton, wheat, jowar, groundnut, gram, paddy, oilseeds, etc.
Mixed red and black soils. .	Wheat, barley, paddy, jowar, bajra, gram, linseed, *til*, etc.
Red and yellow soils. . .	Rice (this is the rice zone of the State).
Skeletal or gravelly soils	Inferior millets and oilseeds.

13.1. The principal crop zones of the State are as under:—

Zone	*Districts*
Rice	Sidhi, Sahdol, Surguja, Mandla, Bilaspur, Raigarh, Balaghat, Durg, Raipur and Bastar.
Wheat	Vidisha (Bhilsa), Sagar, Damoh, Sehore, Raisen, Hoshangabad and Narsimhapur.
Rice-wheat	Panna, Satna, Rewa, Jabalpur and Seoni.
Cotton-jowar. . . .	Mandsaur, Ratlam, Rajgarh, Ujjain, Shajapur, Jhabua, Dhar, Indore, Dewas, West Nimar and East Nimar.
Jowar-wheat	Morena, Bhind, Gwalior, Datia, Shivpuri, Guna, Tikamgarh, Chhatarpur, Betul and Chhindwara.

Irrigation

14. The gross irrigated area in the State in the year 1959-60 was 23,27,397 acres out of the total cropped area of 4,49,32,460 acres, representing about 5 per cent of the cropped area. The main source of irrigation is canals which irrigate an area of 10,66,696 acres. Wells account for 7,93,865 acres. Tanks and other sources of irrigation account for one-fifth of the total irrigated area in the State.

14.1. Balaghat has the largest percentage of irrigated area, followed by Tikamgarh, Gwalior, Raipur, Chhatarpur, Shivpuri, Bilaspur, Bhind, Durg, Mandsaur, Seoni and Betul. Little irrigated cultivation is practised in the districts of Vidisha, Sehore, Rewa, Satna, Sidhi and Shahdol.

Natural vegetation, crops grown and yields obtained

15. According to the land utilisation statistics, forests occupy over 31 per cent of the total area of the State. In the Northern region and the

Malwa plateau, the forests are semi-xerophtic, and the vegetation consists of bushes and thorny shrubs. The Satpuras and other hilly ranges are well covered with deciduous trees like *dhak, sal, anjan,* teak, etc. The Chhattisgarh plains are fairly well afforested, and constitute the major forest belt of the State. They abound in *sal, saj, tendu, anjan, simal,* etc.

16. Rice is the main crop of the State. Of the total cropped area of 4,49,32,460 acres during 1959-60, rice occupied 1,00,61,270 acres, representing 22 per cent of the cropped area. It is cultivated under a variety of conditions. Madhya Pradesh stands third in the country both with regard to the area and production of rice. The bulk of the area under this crop is contributed by the south-eastern districts of the State where the rainfall is heavy. The total production of rice during 1959-60 was estimated at 3·11 million tons. (The average production of rice during the last quinquennium was 2·77 million tons).

18. Wheat is the next crop in importance with an area of 78,21,180 acres. Among the *rabi* crops, it has the largest share of the area. It accounts for more than 17 per cent of the total cropped area in the State. The State occupies the second position in the country with regard to the area, and third position in respect of the total production of wheat. The northern and western districts contribute the bulk of the area under wheat. In 1959-60, the total production was estimated at 2·11 million tons. (The average production of wheat during the last quinquennium was 1·54 million tons).

19. Next to rice, jowar is the other important *kharif* crop covering nearly 10 per cent of the total cropped area of the State. Gram is an equally important crop and occupies an area of 4·7 million acres. Bajra is an important millet, the cultivation of which is mostly confined to the north-western districts. Among the commercial crops grown in the State, mention may be made of cotton, sugarcane, groundnut, sesamum, linseed, rape, mustard and tobacco.

20. The average yields of principal crops grown in the different districts of Madhya Pradesh are given in Appendix D.

SECTION B

(DESCRIPTION OF BLOCKS AND MEASURES FOR RECLAMATION)

20. In the State of Madhya Pradesh, the total geographical area of 108·36 million acres is classified as under:—

		Acres (million)
1.	Forests	34·29
2.	Land not available for cultivation—	
	(*a*) Barren and unculturable land	5·85
	(*b*) Land put to non-agricultural use	4·72
3.	Other uncultivated land excluding fallows—	
	(*a*) Culturable waste	8·44
	(*b*) Permanent pastures and other grazing lands	8·71
	(*c*) Land under miscellaneous tree crops and groves	0·82
4.	Current fallows	1·96
5.	Fallows other than current fallows	4·02
6.	Net area sown	39·55
	TOTAL	108·36

21. It will be observed that the total area under the head "other uncultivated lands excluding fallows" is 17·97 million acres, and the area classified as "fallows other than current fallows" is 4·02 million acres. The district-wise distribution of the areas under each of these heads is indicated in Appendix E.

22. Of the total area of 21·99 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", an area of 2·55 lakh acres has been offered for reclamation in blocks of 250 acres or more. This area is relatively small in view of the fact that Madhya Pradesh is reported to have the largest area under "culturable waste" (the main category in which wastelands are recorded), next only to Rajasthan which has about 18 million acres under this head. On an enquiry about the relatively small area having been offered for reclamation, we were informed that the figure of 9 million acres reported as culturable waste might be discounted, as revealed by a survey conducted in the Dewas district. Similarly, it has been found as a result of the scrutiny of the revenue records regarding the distribution of wastelands in blocks of different sizes, that only a small percentage of wastelands were available in large-sized blocks.

23. As regards the survey of culturable wastelands carried out by the Directorate of Land Records in the Dewas district in 1958-59, it has been ascertained that the actual extent of culturable wastelands in the district is only 50 per cent of the total area reported in the village records. Similar surveys are now in progress in the Shivpuri, Gwalior, Morena, Guna and Vidhisha districts. A rapid reconnaissance survey of wastelands is also proposed to be undertaken in the Jabalpur and Panna districts.

24. As regards the availability of culturable wastelands in blocks of different sizes, a scrutiny of the revenue records was carried out by the State Directorate of Land Records, and the results of this enquiry are tabulated in Table I. This table shows the number and extent of different blocks of culturable wastelands in 33 out of 43 districts of the State for the year 1957-58. It will be observed that, of the total area under culturable waste, 60 per cent is available in blocks of less than 15 acres, 13·8 per cent in blocks of 15—30 acres, 7·7 per cent in blocks of 30—50 acres, 7·2 per cent in blocks of 50—100 acres, and 11·3 per cent in blocks of more than 100 acres in size.

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TABLE I

Number and areas of different blocks of culturable wastelands in 33 districts for the year 1957-58.

District	Below 15 acres		15—30 acres		30—50 acres		50—100 acres		Above 100 acres		Total	
	No. of Blocks	Area (acres)	No. of Blocks	Area (acres)	No. of Blocks	Area (acres)	No. of Blocks	Area (acres)	No. of Blocks	Area (acres)	No. of Blocks	Area (acres)
Sagar . . .	1,12,117	1,33,224	883	18,013	234	8,705	85	5,832	12	2,192	1,13,329	1,67,966
Damoh . .	56,025	1,12,418	1,456	28,842	229	8,521	79	5,279	40	8,613	57,829	1,63,673
Jabalpur . .	62,756	1,38,527	1,327	25,730	255	9,386	64	4,265	11	1,656	64,413	1,79,564
Mandla . .	77,634	1,75,698	377	7,129	84	2,858	16	933	2	270	78,113	1,86,888
East Nimar . .	9,546	26,000	316	6,273	62	2,312	21	1,288	6	732	9,951	36,605
Balaghat . .	1,921	5,858	13	295	3	137	..	..	..	..	1,937	6,290
Betul . . .	68,651	1,26,591	746	14,944	101	3,650	30	1,988	7	652	69,535	1,47,825
Chhindwara . .	77,138	1,40,543	787	15,218	167	6,127	104	6,500	3	612	78,199	1,69,000
Seoni . . .	25,336	1,29,805	1,216	13,363	175	6,827	16	1,467	2	257	26,745	1,51,719
Durg . . .	26,273	53,899	552	9,181	310	6,950	73	4,924	67	8,435	27,275	83,389
Raipur . .	68,645	90,185	597	12,442	172	6,415	77	5,055	16	2,976	69,507	1,17,073
Bilaspur . .	56,562	1,33,418	85	1,717	17	701	11	756	2	264	56,677	1,36,856
Raigarh . .	7,622	24,156	558	10,530	197	7,032	124	8,911	57	8,300	8,558	58,929
Bastar . . .	13,979	98,891	1,321	30,496	670	26,162	311	20,185	119	19,186	16,400	1,94,920

TABLE I—(*contd.*)

Bhind . . .	83,408	46,962	34	372	3	96	1	62	1	243	83,447	47,735
Morena . .	68,394	1,13,808	1,810	36,424	831	32,367	648	45,684	727	1,31,316	72,410	3,59,779
Bhilsa . . .	48,721	1,47,176	2,257	46,160	794	30,838	375	25,376	174	23,623	52,321	2,73,173
Rajgarh . .	19,213	53,829	783	16,288	589	21,904	326	23,438	199	34,181	21,110	1,49,640
Shajapur . .	1,05,851	1,21,986	263	5,104	64	2,609	36	2,442	17	2,267	1,06,231	1,34,408
Ratlam . .	49,276	67,576	516	11,459	262	9,020	171	12,098	91	12,133	50,336	1,12,286
Indore .	18,215	40,398	72	1,489	15	565	11	792	..	..	18,313	43,244
West Nimar .	1,19,342	2,04,283	3,241	66,726	306	17,129	102	6,810	14	2,394	1,23,005	2,97,342
Dhar . . .	53,447	84,492	468	6,520	59	2,426	21	1,742	..	..	53,995	95,180
Jhabua. . .	27,267	53,403	427	8,719	138	5,573	48	3,122	37	7,070	27,917	77,887
Rewa . . .	28,542	51,200	822	17,147	342	12,986	201	13,822	115	21,654	30,022	1,16,809
Shahdol . .	37,167	1,18,846	2,273	37,755	211	99,06	102	6,884	21	5,904	39,774	1,79,295
Datia . . .	6,688	13,506	43	909	..	..	..	..	..	..	6,731	14,415
Tikamgarh . .	16,985	32,934	1,142	24,071	407	15,739	217	14,662	44	6,022	18,795	93,428
Chhatarpur . .	4,503	24,956	852	18,601	329	12,169	120	8,365	27	8,276	5,831	72,367
Panna . . .	23,302	40,764	3,747	15,331	2,134	12,222	1,460	15,744	854	1,03,024	31,497	1,87,085
Sehore . .	35,444	1,32,065	2,451	50,712	853	31,979	454	30,409	164	26,213	39,366	2,71,378
Raisen . .	5,090	29,558	850	17,393	313	11,852	161	10,697	96	21,889	6,510	91,389
Surguja . .	66,383	1,73,734	4,122	95,239	1,449	51,955	843	64,444	509	97,256	73,306	4,82,668
Total	14,81,443	29,40,689	36,405	6,70,591	11,775	3,77,158	6,308	3,54,156	3,434	5,57,610	15,39,365	49,00,2 05

25. Both the Dewas survey and the scrutiny of the revenue records have clearly shown that the extent of arable wastelands available in the State is much less than that reported in the revenue records, and that the bulk of wastelands is found in blocks smaller than 250 acres spread all over the State. This conclusion is further supported by the experience of the revenue authorities who hold that the total area under culturable waste may not exceed 4 million acres. It may be stated that in Madhya Pradesh, each village is required to set apart a certain proportion of the area as common land, and this area is normally taken out of the area classified as culturable waste, thus reducing the actual area under culturable waste in the villages. Another feature of the wastelands is that in the districts where the pressure of the population on the land is heavy, there are hardly any large blocks of suitable wastelands which have not either been allotted by the Government, or are not being cultivated unauthorisedly. On the other hand, large areas are lying waste in districts where the density of population is low. It has not been possible to bring these lands under cultivation as most of the cultivators prefer allotment of wastelands to be made to them near the village *abadis*.

26. We understand that the State Government is taking vigorous steps in the disposal of wastelands by allotting them to landless labourers and the members of the Scheduled Castes and the Scheduled Tribes. We recommend that this process of distribution of wastelands should be continued, but would suggest that a rapid reconnaissance survey of wastelands should be conducted quickly so that the marginal lands are not allotted for arable cultivation. This survey will also provide the basis on which the District Collectors will proceed to allot the lands to settlers or tenants, with the result that the lands classified as being suitable for pastures or forestry will not be used for agricultural purposes.

27. The distribution of wastelands offered for reclamation in the different districts is given below:—

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District	Block No.	Area (acres)
Chhatarpur	1—2	3,371
Morena	3—42	43,749
Raigarh	43—49	3,590
Bhind	50	235
Vidisha	51—53	808
Chindwara	54	303
Raipur	55	300
Dewas	56—62	2,720
Raisen	63—66	1,089
Tikamgarh	67	2,600
Damoh	68—72	4,606
Gwalior	73—74	550
Shivpuri	75—120	22,925
Sehore	121—125	1,456
Jhabua	126—127	922
Seoni	128—129	766
Betul	130—133	1,486
Panna	134—178	27,439
Satna	179—217	25,458
Rewa	218—232	7,619
Guna	233—357	1,01,469
Surguja	358—361	1,676
TOTAL		2,55,137

28. No blocks of wastelands of 250 acres or more in size were reported from the remaining 21 districts.

29. Map II shows the location of blocks of wastelands in the different districts.

30. A few comments on the different blocks are given below, while fuller details are tabulated in Appendix F.

31. *Block* 1 comprising 2,718 acres is situated in village Buxwaha, in the Bijawar tehsil of the Chhatarpur district. The land is over-grown with thick jungle and can be reclaimed with heavy tractors. The soil is red and black. Good crops of paddy, jowar, maize, wheat and oilseeds can be grown in the block. The area receives a rainfall of about 45 inches, and irrigation can be provided by the construction of wells. The cost of reclamation is estimated at Rs. 65 per acre.

32. *Block* 2 measuring 653 acres is situated in village Jagara, in the Buxwaha tehsil, and forms part of the Buxwaha C.D. Block. The land is infested with jungle growth and is mostly flat. The soil is of the same type as in block 1. The area receives a rainfall of about 45 inches. Perennial irrigation can be provided by the construction of wells. The cost of reclamation is estimated at Rs. 70 per acre.

33. *Blocks* 3—42 comprise a total area of 43,749 acres located in the tehsils of Sheopur, Vijayapur and Jora. The actual locations of the different blocks are given in Appendix F. All these lands are infested with shrubs, bushes and jungle. The soil is fertile alluvium, and is well supplied with potassium but is poor in phosphate, nitrogen and humus. The soil of blocks in Sheopur is black in colour, clayey, low in soluble salts and neutral in reaction, and has a layer of lime at a depth of 2—4 feet. The soil of blocks in Jora is yellowish brown and less clayey. The rainfall ranges from 30 to 35 inches. Irrigation is available from wells in blocks 3 and 4. Blocks 5, 6, 10—18 and 42 are under the command of the Chambel river project, and perennial irrigation will be assured in these blocks. Irrigation can be provided in block 31 from the river Sank, and in blocks 33 and 34 from the river Asan. No irrigation facilities are available in blocks 7—9, 19—30, 32 and 35—41. The average cost of reclamation in these blocks is estimated at Rs. 225 per acre.

34. *Block* 43 comprising 1,390 acres is situated in village Kudumkela, in the Gharghoda tehsil, and forms part of the Gharghoda C.D. Block. The block is connected by an all-weather road. The area is infested with jungle growth, and reclamation is possible only with heavy tractors. The soil is sandy red and poor in texture. The rainfall ranges from 40 to 50 inches. Irrigation facilities can be provided by the construction of tanks, and also from wells since the sub-soil water is available at a depth of 10 ft. from the surface. The cost of reclamation is estimated at Rs. 200 per acre.

35. *Blocks* 44—49. Of these six blocks, blocks 44, 45, 48 and 49 are located in the Gharghoda tehsil, and form part of the Gharghoda C.D. Block. The area of each block is 300 acres. The land is infested with jungle and can be reclaimed with tractors. The soil is red and sandy loam. The area receives a rainfall of about 50 inches, which is confined to the period from June to October. No irrigation is available. The cost of reclamation is about Rs. 100 per acre.

35.1. The other two blocks, *viz.*, blocks 46 and 47 are located in the Dharamjaigarh tehsil, and are connected by a fair-weather road. The total area of block 46 is 700 acres, and of block 47, 300 acres. The land is infested with jungle and can be reclaimed by manual labour. The soil is red and is light and sandy. The rainfall ranges from 50 to 70 inches. No irrigation is available. The cost of reclamation will be about Rs. 60 per acre.

36. *Block* 50. This block is situated in village Dandroua, in the Mehgaon teshil of the Bhind district, and forms part of the Mehgaon C. D. Block. It is connected by an all-weather road. Most of the area of the block is suitable for cultivation, but a portion of it will have to be protected by contour-bunding. The soil is medium clay. The average rainfall is about 40 inches. Crops like paddy and wheat can be grown. The area is under the command of the Chambal river project.

37. *Blocks* 51-53. The total area of these blocks is 808 acres. Block 51 is situated in village Haripur, and forms part of the Sironj C. D. Block. Block 52 is located in village Kadarpur and is in the same C. D. Block. Block 53 is situated in village Narayanpur. The lands are infested with jungle growth, shrubs and bushes, and can be reclaimed with tractors. The soil is red and yellow in blocks 51 and 52, and black and yellow in 53. The area receives a rainfall of about 40 inches. Perennial irrigation can be made available by digging wells. The area is subject to the depredation of wild animals. The cost of reclamation will be about Rs. 50 per acre.

38. *Block* 54 is located in village Mokarkund in the Chindwara tehsil, and forms part of the Tamia C. D. Block. Part of the area is infested with shrubs, bushes and jungle, and about 200 acres of land are badly eroded. The soil is shallow black. The rainfall ranges from 45 to 50 inches. The area needs to be contour-bunded. As irrigation facilities do not exist, only dry farming can be practised in the area. The cost of reclamation is likely to be heavy, and has been estimated at Rs. 500 per acre, as heavy clearance work is involved.

39. *Block* 55 is situated in village Khudiadih, in the Bindranawagarh tehsil of the Raipur district. The soil is yellow. The rainfall is about 50 inches. A portion of the area is infested with jungle, shrubs and bushes, and the rest is badly eroded. As there are no facilities for irrigation, only dry farming can be practised. The cost of clearance of jungle and bushes and of soil conservation measures is estimated at Rs. 150 per acre.

40. *Blocks* 56—62 are located in the Bagli tehsil of the Dewas district, and form part of the Bagla C. D. Block. The area is infested with jungle growth and can be reclaimed by manual labour. The soil is medium black. The rainfall is about 30 to 40 inches. Seasonal irrigation can be provided in blocks 57 and 58 by constructing small dams across the nallahs. The cost of reclamation will be about Rs. 50 per acre.

41. *Block* 63 comprising 284 acres is located in village Bagwara, in the Silwani tehsil of the Raisen district. A portion of the area is infested with shrubs and jungle, and the rest is eroded and needs to be contour-bunded. The soil is yellow. No irrigation is available. The cost of reclamation will be about Rs. 100 per acre.

42. *Block* 64 is located in village Bhoocibeta in the Raisen tehsil, and forms part of the Sanchi C. D. Block. The entire area of 250 acres is infested with thick growth of shrubs and jungle. The soil is medium black. No irrigation is available. The cost of reclamation is likely to be high because of thick shrub growth. It has been estimated at Rs. 400 per acre.

43. *Blocks* 65 *and* 66 are situated in the Goharganj and Raisen tehsils respectively. The land is infested with jungle and shrubs. The details about the type of soil and irrigation facilities are the same as for block 64.

44. *Block* 67. This block consists of 8 sub-blocks located in villages Bangain, Dargawan Bhata, Toria, Saidry, Sunrai Bhata, Darbar Crungle, Teharka Bata and Kathan Paheri. The first three sub-blocks form part of the Jatara C. D. Block, while the remaining 5 sub-blocks are in the Newari C. D. Block. All the blocks are connected with the adjoining villages by a fair-weather road. Reclamation is necessary only in some parts of this block, which are infested with trees and shrubs. The soil is mixed red and black, and is poor in texture. The area has a rainfall of about 40 inches. Irrigation can be provided from the Gursarai Canal and the Paricha dam for the last five sub-blocks, while for the first three sub-blocks wells can serve as the source of irrigation. The cost of reclamation will be more than Rs. 200 per acre.

45. *Blocks* 68—72 are located in the Hatta tehsil of the Damoh district. The entire area of 4,606 acres is infested with weeds and jungle, which will have to be cleared and the land ploughed up with heavy tractors. The soil is medium black in block 68 and medium black and lateritic in blocks 69—72. The area receives a rainfall of 50—55 inches. Perennial irrigation can be provided by the construction of wells in block 68 only. The cost of reclamation will be about Rs. 50 per acre.

46. *Blocks* 73—74 are located in villages Kaiwari and Aron, in the Gwalior tehsil. The area is infested with shrubs and bushes. The soil is black clay and loam and very poor in texture. Irrigation can be provided by digging wells. The cost of reclamation will be Rs. 50 per acre.

47. *Blocks* 75—87. These blocks are located in the Shivpuri tehsil of the Shivpuri district. The entire area is infested with shrubs and bushes. The soil is mixed red and black and generally light in texture. The area receives a rainfall of about 35 inches. No irrigation is available. The cost of reclamation will be about Rs. 100 per acre.

48. *Blocks* 88—108. These blocks comprising a total area of 12,162 acres, are located in the Pohri tehsil of the Shivpuri district. The entire area is infested with shrubs and bushes. The area receives a rainfall of about 40 inches. The soil is black. No irrigation is available. The cost of reclamation will be about Rs. 100 per acre.

49. *Blocks* 109—120. The total area of these blocks is about 4,165 acres. The land is infested with shrubs and bushes and can be reclaimed with the help of tractors. The soil is black and varies from light to heavy clay in texture. It may be possible to provide irrigation to the bolck by taking diversions from the nearby rivers and nallahs. The cost of reclamation will be about Rs. 50 per acre.

50. *Block* 121 is located in village Bijla, in the Nasarullaganj tehsil. The area is infested with weeds, shrubs and bushes. The soil is black. The area receives a rainfall of 30 to 50 inches. Wells and tube-wells can be sunk to provide perennial irrigation. The cost of reclamation is estimated at Rs. 50 per acre.

51. *Blocks* 122-123 are located in village Khadabad, in the Budni tehsil. The area comprising about 650 acres is infested with shrubs and bushes. A portion of the area in block 123 is rocky and hilly and is not fit for cultivation. The soil in block 122 is black, while that in block 123 is generally rocky. Irrigation is not available. The cost of reclamation will be about Rs. 100 per acre.

52. *Block* 124 is located in village Pilikarar, and consists of 261 acres. The area is undulating and will need to be contour-bunded, in addition to the clearance of shrubs and bushes from the land. The soil is black. Irrigation is not available. The cost of reclamation will be about Rs. 50 per acre.

53. *Block* 125 is located in village Bordh, in the Budni tehsil, and consists of 269 acres. About half the area is infested with shrubs and bushes, and can be reclaimed with tractors. The soil is black. Canal irrigation may be available if the scheme to build the Kolar river dam is taken up under the Third Five Year Plan. The cost of reclamation is estimated at Rs. 100 per acre.

54. *Block* 126 is located in village Dudhi-teh-Jhabua, in the Jhabua tehsil, and forms part of the Rama C. D. Block. The area is infested with shrubs and bushes here and there. The soil is gravelly red and is poor in organic matter. The area receives a rainfall of 30 inches. Irrigation is not available. The cost of reclamation will be Rs. 50 per acre.

55. *Block* 127 is situated in village Amankuna, in the Jobat tehsil. The area is undulating and will have to be contour-bunded to make it fit for cultivation. The soil is gravelly red and very poor in organic matter. The cost of reclamation will be about Rs. 200 per acre.

56. *Blocks* 128 *and* 129. These blocks are located in the Sooni tehsil, and comprise 766 acres. The area is infested with shrubs and bushes and can be cleared by manual labour. The soil is shallow black. The area receives a rainfall of 50 to 60 inches. Irrigation may become available in block 128 after the dam is constructed across the Bargud nallah. The cost of reclamation will be about Rs. 50 per acre.

57. *Blocks* 130—132 are located in the Bhainadehi tehsil. The entire area is infested with thick growth of shrubs and jungle. The soil is red. It is poor in organic matter. The area receives a rainfall of 40 to 45 inches. Irrigation is not available. The cost of reclamation is estimated at Rs. 300 to Rs. 400 per acre.

58. *Block* 13 is located in village Dunda Boorgaon, in the Betul tehsil. The area is infested with shrubs and bushes. The soil is red loam and light in texture. It is very poor in organic matter. Irrigation can be provided by the construction of wells. The cost of reclamation will be about Rs. 100 per acre.

59. *Blocks* 134—178. Blocks 134 to 169 and 174 to 178 are all located in the Panna tehsil, while blocks 170—173 are situated in the Pawai tehsil of the Panna district. The locations of the different blocks are given in Appendix F. The entire area comprising about 27,439 acres is infested with bushes and jungle. The soil is mainly mixed red and black. The major characteristics of the red soil are light texture, the absence of lime concretions and free carbonates. The texture of the soil is sandy clay, and it varies greatly in depth and fertility. The area receives a rainfall of about 45 inches. No irrigation is available. The cost of reclamation has been variously estimated at Rs. 1,000 to Rs. 1,500 per acre, depending upon the degree of jungle infestation in the different areas. It is, however, not likely to be as high as indicated here.

60. *Block* 179 is located in village Nivi, in the Satna district, and comprises 1,679 acres of land infested with shrubs and bushes. The soil is mixed red and black with a light texture. The area receives a rainfall of about 45 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

61. *Blocks* 180—190 comprising 5,885 acres are located in the Raghurajnagar tehsil of the Satna district. The entire area is infested with thick growth of shrubs and bushes. The soil is mixed red and black with a light texture. The area receives a rainfall of about 45 inches. No irrigation is available. The cost of reclamation of these blocks will be between Rs. 200 and Rs. 500 per acre, and will be uneconomical.

62. *Blocks* 191—192. These two blocks comprising 736 acres are located in the Amarpatan tehsil of the Satna district. The details about the type of soil, the annual rainfall, and the cost of reclamation are the same as for blocks 180—186. Irrigation facilities are likely to become available during the Third Five Year Plan period.

63. *Blocks* 193—217. These blocks comprising 17,158 acres are mostly located in the Nagod tehsil of the Satna district. The details about the type of soil, the annual rainfall, and the cost of reclamation are the same as for blocks 191—192. Blocks 196 and 197 are likely to receive irrigation during the Third Plan period. The remaining blocks are not likely to receive the benefit of irrigation.

64. *Blocks* 218—232 comprising 7,619 acres are located in the Rewa district. The land is infested with thick growth of shrubs and bushes and will have to be cleared with heavy tractors. The land is flat but is rocky at some places. The soil is red and black. No irrigation is available in any of the blocks. The cost of reclamation will be about Rs. 100 per acre.

65. *Blocks* 233—357 comprising a large area of about one lakh acres of wastelands are located in the Guna district. The bulk of these lands is in the Bamori tehsil, at a distance of 20—50 miles from Guna. The communications are poor. The land is infested with thick growth of jungle, and reclamation work will have to be carried out with the help of heavy tractors. The soil is mostly alluvium and black. The land is flat. The average rainfall ranges from 30 to 50 inches. No irrigation is available in the blocks. The sub-soil water is available at depth of 40—80 feet in most of the areas, and it is costly to dig wells. The cost of reclamation will be about Rs. 100 per acre.

65.1. The main problem of this area is the scarcity of water both for drinking and irrigation. Wells have not been successful in this area. A medium irrigation project, known as Bamori Irrigation Scheme, was planned to be undertaken in this area during the Second Plan period, but the site of the project was not found feasible. Investigations to find an alternative site are in progress. A suggestion has been made that a series of weirs and dams may be constructed on the nalas flowing through the area, so as to augment the water supply in the wells. Successful attempts in this direction have been made in some parts of Rajasthan where the construction of sub-surface dams across the drainage channels has proved extremely beneficial in increasing the supply in village wells. In view of the availability of large areas of wastelands in the Guna district, which can conveniently be brought under cultivation, we would suggest that communications with the villages and towns near the wasteland areas should be improved, and that a rapid survey should be conducted for exploring the possibility of augmenting the water supply in the wells by the construction of dams and weirs on the nallas.

66. *Blocks* 358—361 comprising 1,676 acres are located in villages Narbadapur, Kamleshwarpur, Kuniya and Rupkhar, in the Surguja district. These blocks are not compact as they are interspersed with cultivators' holdings. Part of the area is classified as pasture lands which has, however, been released by the Government for cultivation. Reclamation will be necessary in some portions of the area where there is growth of bushes and shrubs. The land is slightly stony. The soil is mixed red and yellow. The rainfall is about 65 inches. A portion of the area can be irrigated by constructing embankments across the nalla near village Kuniya. The average cost of reclamation is estimated at Rs. 100 per acre.

67. To sum up, it may be observed that over 77 per cent of the blocks of wastelands located for reclamation are situated in undulating tracts, and the remaining in the plains which are more or less flat. About two-thirds of the area has medium black cotton soil, three-tenths mixed red and black soil, and the rest other types of soil. The bulk of the area lies in tracts with a rainfall of 30 to 60 inches. The rest of the wastelands are located in the dry zone where the rainfall is less than 30 inches. Practically no irrigation facilities are available in any of these areas.

SECTION C

(DISPOSAL OF RECLAIMED LANDS FOR CULTIVATION)

Nature of ownership of wastelands and their disposal for cultivation

68. In this section, we deal with the different measures for the disposal and development of wastelands which have been located in the State These measures would primarily depend upon the nature of ownership of wastelands. In the State of Madhya Pradesh, the wastelands are owned by the following :

1. Private individuals,
2. Government, and
3. Bhoodan Organisation.

69. A statement showing the break-down of wastelands in the different districts according to the nature of ownership is given in Appendix G. It will be seen from the statement that more than 93 per cent of the wastelands belong to the Government, while only a small area is the property of private individuals, or is donated to the Bhoodan organisation.

70. The problems involved in the disposal of wastelands in each category of ownership are discussed below.

70.1. *Private lands.*—The extent of wastelands belonging to private individuals is 11,194 acres, or 4.47 per cent of the total area offered for reclamation in blocks of 250 acres or more. These lands have not been brought under cultivation mainly because the cost of reclamation is quite high and is beyond the capacity of individual owners.

70.2. *Government lands.*—As stated earlier, the bulk of the wastelands in blocks of 250 acres or more belongs to the Government. In order to bring these lands under cultivation, we suggest that co-operative colonies of landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc., may be set up, or that these lands may be allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc. in accordance with the existing regulations under the Land Revenue Code. As most of the wastelands are found in the districts where the density of population is low, the establishment of co-operative colonies of settlers seems to be the only feasible method of disposal of wastelands in these districts. The expenditure on the setting up of co-operative colonies is much more than that involved in reclaming lands and allotting these to private individuals for cultivation. We recommend that larger allocations for settlement work should be made and that the State Government should make every effort to dispose of as large areas of wastelands as possible by organising co-operative colonies of settlers. A model settlement scheme is given in Appendix H.

70.2.1. During the Third Plan period, the Government of Madhya Pradesh propose to utilise wastelands for settling landless labourers. We give below some of the broad features of the schemes for establishing colonies of landless labourers on a co-operative basis and for allotment of wastelands to individual cultivators, prepared by the State Directorate of Land Records.

(a) *Establishment of model villages.*—Wherever large blocks of wastelands are available, the State Government propose to establish model villages to encourage joint co-operative farming and to promote village planning, sanitation, etc. Agricultural graduates interested in taking up farming as a vocation will be settled, along with others, in these model villages so that they may provide the necessary leadership for implementing developmental schemes in the villages and the neighbouring rural areas.

(b) *Settlement of landless labourers in groups and colonies.*—In this case, the co-operative method of organisation in which lands will be individually owned and operated but all the services will be provided by a service co-operative of which the settlers are members, will be applied.

(c) *Allotment of lands to individuals.*—The scheme contemplates the allotment of lands to individual cultivators without any financial commitment on the part of the Government.

70.3. *Bhoodan lands.*—The total extent of Bhoodan lands offered for reclamation is only 6,093 acres. These lands are proposed to be allotted in accordance with the provisions of the State Bhoodan Yagna Act.

Suggestions for effective utilisation of wastelands

71. We may now make a few suggestions for the effective utilisation of wastelands located in the different districts of the State.

72. A detailed survey for land-use, as indicated in para 26, should be carried out in each area proposed for reclamation, so that the lands are put to the best use. The State Government may apply for financial assistance to the Central Soil Conservation Board for conducting these surveys.

73. In order to carry out the programme of reclamation indicated in the previous section, it will be necessary for the State Directorate of Agriculture to add to the existing strength of its tractor fleet.

74. After reclamation measures have been carried out, the responsibility for the follow-on cultivation should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

75. Wherever irrigation facilities can be provided by the construction of wells or tube-wells, loans may be given on a liberal scale to the cultivators.

76. Whenever allotments of Government lands are made to individuals other than the members of the Scheduled Castes and the Scheduled Tribes, etc., it is necessary to ensure that the persons to whom the lands are allotted are able to cultivate them without any special financial assistance from the Government.

77. Allotments of wastelands to landless labourers, members of the Scheduled Castes & the Scheduled Tribes, etc., are being made for the past several years, but it is not known as to what percentage of the lands allotted so far has been brought under cultivation. An enquiry into this matter seems necessary with a view to ascertaining whether there are any lands which have not been cultivated, and the reasons for keeping them fallow. The results of this survey will help the State Government in adopting such measures as will discourage the allottees from leaving the lands uncultivated.

78. At present, settlement work is being carried out by both the Tribal Welfare Department and the Land Records Department. We recommend that there should be a close co-ordination between the work of these two departments in relation to settlement projects, so that the funds at the disposal of these two Departments are utilised in the best manner possible.

79. We understand that under the Third Five Year Plan, the State Government propose to undertake settlement projects to cover an area of 36,000 acres of wastelands. We had an opportunity of visiting some of the settlement projects initiated by the Madhya Pradesh Government in the districts of Shivpuri and Guna during the Second Plan period. We were much impressed by the progress made by these projects, the co-operative spirit shown by the settlers, and the interest which the officers of the Land Records and Colonisation Departments were taking in the execution of the projects. In view of the very satisfactory progress made during a short period, we recommend that the tempo of settlement work may be increased during the Third Five Year Plan period. A brief review of the colonisation and settlement work in Madhya Pradesh, and proposal for the extension of this work under the Third Plan, as furnished to us by the Directorate of Land Records, is given in Appendix I.

80. In any settlement project, the selection of settlers is the most important factor contributing to its success. Accordingly, special attention should be given to this important aspect of the settlement work, so that the right type of settlers who have an aptitude for agricultural work and who would be willing to do hard work, are selected.

81. Settlement projects should be undertaken in those districts where the prospects of settlement are more encouraging *i.e.,* where irrigation and good fertile land are available, and the right type of settlers are forth-coming to take up cultivation, and the cost of settlement is not high, as compared to other districts.

82. For any settlement work to be successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. We found that where the District Collectors and the Block Development Officers had taken personal interest in the settlement work, the projects were very successful.

83. The general cropping patterns recommended for the wastelands located in Madhya Pradesh are as under:—

83.1. Among the districts where the wastelands are found, the districts of Morena, Bhind, Gwalior and a portion of Shivpuri constitute the alluvial belt of the State. The principal crops of these districts are wheat and jowar, although a variety of other crops such as rice, bajra, gram, sugarcane and arhar (*Cajanus cajan*) are grown extensively.

83.2. In the other districts of Guna, Shivpuri, Vidisha, Raisen, Sehore, Damoh, Jhabua, Seoni, Chhindwara and Betul, which form part of the black soil belt of the State, cotton and gram are extensively cultivated as *rabi* crops. Sugarcane is also grown in places where irrigation is available.

83.3. In the districts of Rewa, Panna, Satna, Tikamgarh, Chhatarpur, Betul and Chhindwara, mixed red and black soils predominate. The first three districts form part of the rice-wheat zone of the State, while in the remaining four districts, wheat and jowar are the main crops. The other crops grown in these districts are *bajra,* barley, gram, linseed and *til.*

83.4. In the districts of Raigarh, Surguja and Raipur, the main crop is rice. In the deep clayey soils of Raipur, paddy responds well to the application of nitrogenous and phosphatic fertilizers.

Economic aspects of reclamation.

84. We may now examine the economic aspects of reclamation of wastelands located in the different districts. The two main factors influencing the economics of reclamation are the cost of reclaiming wastelands and the anticipated benefits on account of reclamation, more particularly in terms of additional argricultural production. (In the peculiar conditions obtaining in Madhya Pradesh, the cost of settlements on wastelands which is usually heavy, will also have to be taken into account). It may be noted, however, that reliable estimates of the cost of reclamation and the yields of crops per acre are not available. The figures furnished by the Revenue agency of the State are based on their experience and observations and not any scientific survey, and accordingly cannot be considered very reliable. They broadly indicate the cost of reclamation and the benefits that will accrue in the form of additional production. Table II shows the cost of reclaiming wastelands found in the different districts, divided into four classes, *viz.,* Rs. 50—100, Rs. 101—200, Rs. 201—250 and more than Rs. 250.

TABLE II

Cost of reclaiming wastelands found in the different districts

Cost of reclamation	Block No.	District	Area (acres)
Rs. 100 or less .	1, 2 44-49. 50 51-53, 56-62, 63, 68-72 73-74, 75-108, 109-120, 121, 122, 123, 124, 125, 126, 128-129, 133, 179, 218-232 233-357 358, 361.	Bhind, Vidisha, Dewas, Damoh, Gwalior, Shivpuri, Sehore, Jhabua, Seoni, Satna, Chhatarpur, Raigarh, Raisen, Betul, Rewa, Guna and Surguja.	1,52,948
Rs. 101—200 .	43, 55, 67, 127	Raigarh, Raipur, Tikamgarh and Jhabua.	4,928
Rs. 201-250 .	3-42.	Morena	43,749
Rs. 250 and above	54, 64-66, 130-132, 134-178, 180-217.	Chhindwara, Raisen, Betul, Panna and Satna.	53,512

85. As pointed out earlier, it appears that in the districts where the bulk of wastelands are found, the only feasible method of bringing these lands under cultivation is to establish co-operative colonies of settlers as the size of holdings in these districts is quite large, and threre is, therefore, no desire on the part of the local settlers to move away from their existing holdings. The utilization of wastelands in these districts, therefore, involves not only the reclamation of wastelands but also the establishment of settlement colonies for arranging their cultivation. The settlement of landless labourers and the members of the Scheduled Castes and the Scheduled Tribes is, however, a social problem, and the expenditure on this account should accordingly be treated separately from the cost of reclamation, which alone should be considered in determining the economic aspects of a reclamation project.

86. It would be observed from Table II that, of the total area of 2,55,137 acres of wastelands offered for reclamation in the different districts, the cost of reclaiming 53,512 acres located in the districts of Chhindwara, Raisen, Betul, Panna and Satna would exceed Rs. 250 per acre. In fact, the cost is reported as high as Rs. 350 in the Satna district (*vide* blocks 54 and 134—138). These lands are badly eroded, and are covered with thick jungle growth. In these circumstances, we do not recommend that any expenditure should be incurred on the reclamation of the wastelands referred to above, except the lands in blocks 191-192 and 196-197, which may be reclaimed after irrigation is assured from the irrigation projects likely to be completed during the Third Plan period.

87. We may now examine the economic aspects of reclaiming the remaining areas comprising 2,01,625 acres in terms of the additional food production with reference to the expenditure involved. As no reliable figures of additional yields of food crops expected to be obtained from reclaimed lands are available, we recommend that crop-cutting surveys should be conducted in the reclaimed lands during the Third Five Year Plan, particularly in the districts of Guna, Shivpuri and Morena, where large blocks of wastelands are likely to be taken up for reclamation.

88. In the absence of reliable figures of additional production in the different districts, based on scientific surveys, we have adopted the figures of expected yields as estimated by the District Collectors, for working out the economic aspects of reclamation. Table III shows the area proposed for reclamation in each district, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional food production.

TABLE III

Cost of reclaiming wastelands in the different districts and estimated additional production

District	Block No.	Area proposed for relcamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional food production per acre (mds.)	Total additional production (mds.)	Value* of total additional Production (Rs.)	Value* of additional production per acre (Rs.)	Average cost of reclamation per maund of additonal production (Rs.)
Chhatarpur	1	2,718	65	1,76,670	8	[illegible]1,744	2,60,928	96	8·1
	2	653	70	15,710	4	2,612	31,344	48	17·5
Morena	3—42	43,749	225	98,43,525	8	3,49,992	1,99,904	96	27·8
Raigarh	43	1,390	202	2,78,000	10	13,900	1,66,800	120	20·0
	44, 45, 48 & 49	1,200	100	1,20,000	10	12,000	1,44,000	120	10·0
	46, 47	1,000	60	60,000	10	10,000	1,20,000	120	6·0
Bhind	50	235	Negligible	Negligible	8	1,880	22,560	96	Negligible
Vidisha	51—53	808	50	10,400	3	[illegible],424	29,088	36	16·7
Raipur	55	300	150	45,000	8	,400	28,800	96	18·8
Dewas	56—62	2,720	50	1,36,000	3	[illegible],160	97,920	36	16·7
Raisen	63	284	100	28,400	4	1,136	13,632	48	25·0
Tikamgarh	67	2,600	200	5,20,000	3	7,800	93,600	36	66·7
Damoh	68—72	4,606	50	2,30,300	3	13,818	1,65,816	36	16·7

TABLE III—(*contd.*)

Gwalior	73—74	550	50	27,500	4	2,200	26,400	48	12·5
Shivpuri	75—108	18,760	100	18,76,000	6	1,12,560	13,50,720	72	16·7
	109—120	4,165	50	2,08,250	6	24,990	2,99,880	72	8·3
Sehore	121	276	50	13,800	4	1,104	13,248	48	12·5
	122, 123 & 125	919	100	91,900	4	3,676	44,112	48	25·0
	124	261	50	13,050	4	1,044	12,528	48	12·5
Jhabua	126	284	50	14,200	2	568	6,816	24	25·0
	127	638	200	1,27,600	2	1,276	15,312	24	100·0
Seoni	128—129	766	50	38,300	10	7,660	91,920	120	5·0
Betul	133	300	100	30,000	2	600	7,200	24	50·0
Satna	179	1,679	50	83,950	5	8,395	1,00,740	60	10·0
Rewa	218—232	7,619	100	7,61,900	5	38,095	4,57,140	60	20·0
Guna	233—357	1,01,469	100	1,01,46,900	6	6,08,814	73,05,768	72	16·7
Surguja	358—361	1,676	100	1,67,600	6	10,056	1,20,672	72	16·7
TOTAL .		2,01,625		2,51,24,955		12,68,904	1,52,26,848		

*A common price of Rs. 12/- per maund is assumed.

89. It will be seen from the table that the cost of reclaiming 2,01,625 acres (exclusive of the cost of settlement work) comes to about Rs. 2·51 crores, *i.e.*, about Rs. 125 per acre. The estimated production from the reclaimed lands is about 46,600 tons valued at about Rs. 1·52 crores. Thus, the value of production will cover the cost of reclamation in two to three crop seasons.

90. As regards the cost of reclaiming wastelands in the different districts, the areas offered in the districts of Shivpuri, Guna, Rewa and Damoh seem to be very promising in increasing agricultural production, since the cost of reclaiming the lands is about Rs. 100 per acre, and there are also large areas of these wastelands, which have fertile alluvial or black soils. In the Guna district, however, there is scarcity of drinking water, and a rapid survey of the ground-water resources would be necessary before any large-scale operations for reclaiming wastelands would be successful.

91. Morena is another district where large areas of wastelands are found. The cost of reclamation in this district is rather high, *i.e.*, Rs. 225 per acre, but the estimated additional production of about 8 maunds per acre will pay off the cost of reclamation in a period of two to three years. Further, there are some blocks in this district (blocks 5, 6, 10—18 and 42) which will be commanded by the Chambel River project, during the Third Plan period, and should, therefore, receive high priority in the reclamation programme of the State. The wastelands in the districts of Raigarh and Raipur can, on reclamation, yield 8 to 10 maunds of rice per acre. Similarly, the areas in the Bhind and Chhatarpur districts, which are capable of yielding about 8 maunds of food-grains per acre, should be taken up for reclamation early. The cost of reclaiming wastelands in the districts of Vidisha, Dewas, Gwalior, Sehore, Seoni and Betul ranges from Rs. 50 to Rs. 100 per acre, but the production is not likely to exceed 3 to 4 maunds per acre. As regards the wastelands in Tikamgarh, we suggest that the reclamation work may be taken up only when irrigation from the Gursarai Canals and the Paricha Dam becomes available. In the Jhabua district, the cost of reclamation would be about Rs. 200 per acre, and the estimated poduction is also quite low due to the gravelly nature of the soil. Such lands should not be taken up for reclamation for the present.

92. We may now proceed to discuss the priorities among the wastelands located in the different districts.

93. The total area of wastelands located for relamation in blocks of 250 acres or more in the entire State is about 2:5 lakh acres, of which about 2 lakh acres can be brought under cultivation at an economic cost. It is difficult to assign priorities between the wastelands located in the different districts, since this is related to the various development projects which may be taken up in the different parts of the State. However, based on the rainfall, soil conditions, the cost of reclamation and the estimated additional production from the reclaimed lands in the different districts, we suggest the following order of priorities:—

District	Priority	Area (acres)
Chhatarpur, Raigarh, Bhind Vidisha, Raipur, Shivpuri, Surguja, Seoni, Rewa, Gwalior Morena, Guna and Surguja .	I	1,89,037
Dewas, Raisen, Demoh and Sehore	II	9,066
Tikamgarh and Jhabua	III	3,522

SECTION D

(SUMMARY OF GENERAL CONCLUSIONS AND RECOMMENDATIONS)

1. Of the total area of 22·75 million acres under the heads "Other uncultivated lands excluding fallows" and "fallows other than current fallows", only 2·55 lakh acres have been located in the State for reclamation in blocks of 250 acres or more. This area is relatively small in view of the fact that the extent of arable wastelands available in the State is much less than that reported in the revenue records, and the bulk of wastelands is found in blocks smaller than 250 acres spread all over the State.

(Paragraph 22)

2. The wastelands in blocks of 250 acres or more have been located in 21 districts of the State. Large areas of wastelands have been reported in the districts of Morena, Shivpuri, Panna, Satna, Rewa and Guna.

(Paragraph 27)

3. The blocks offered for reclamation are mostly infested with thick jungle growth, shrubs and bushes. No irrigation is available in most of the areas.

(Paragraphs 31—67)

4. The wastelands in the State are owned by the private individuals, the government, or the Bhoodan organisation. More than 93 per cent of the wastelands belong to the Government, and only a small proportion of these lands is the property of private individuals, or is donated to the Bhoodan organisation.

(Paragraph 68)

5. In order to bring the wastelands belonging to the Government under cultivation, co-operative colonies of landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc. may be set up, or these lands may be allotted to the members of the Scheduled Castes and the Scheduled Tribes, etc. in accordance with the existing regulations under the Land Revenue Code. As most of the wastelands are found in the districts where the density of population is low, the establishment of co-operative colonies of settlers seems to be the only feasible method of disposal of wastelands in these districts. The expenditure on the setting up of co-operative colonies is much more than that involved in reclaiming lands and allotting these to private individuals for cultivation. Larger allocations should, therefore, be made for settlement work and the State Government should make every effort to dispose of as large areas of wastelands as possible by organising co-operative colonies of settlers.

(Paragraph 70.2)

6. The lands donated to the Bhoodan organisation are proposed to be allotted in accordance with the provisions of the State Bhoodan Yagna Act.

(Paragraph 70.3)

7. A rapid reconnaissance survey of wastelands should be conducted quickly so that marginal lands are not allotted for arable cultivaion.

(Paragraph 72)

8. In order to carry out the programme of reclamation, it will be necessary for the State Directorate of Agriculture to add to the existing strength of its tractor fleet.

(Paragraph 73)

9. After reclamation measures have been carried out, the responsibility for the follow-up cultivation should be that of the normal staff of the Agriculture Department, which, if necessary, may be strengthened. The agricultural staff should suggest suitable cropping patterns, and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

(Paragraph 74)

10. Wherever irrigation facilities can be provided by the construction of wells or tube-wells, loans may be given on a liberal scale to the cultivators.

(Paragraph 75)

11. Whenever allotments of government lands are made to individuals, other than the members of the Scheduled Castes and the Scheduled Tribes, etc., it is necessary to ensure that the persons to whom the lands are allotted are able to cultivate them without any special financial assistance from the Government.

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(Paragraph 76)

12. An enquiry to find out as to what percentage of lands allotted to the landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc. is brought under cultivation seems necessary, with a view to ascertaining whether there are any lands which have not been cultivated, and the reasons for keeping them fallow. This will help the State Government in adopting such measures as will discourage the allottees from leaving the lands uncultivated.

(Paragraph 77)

13. There should be close co-ordination between the work of the Tribal Welfare Department and the Land Records Department in relation to the settlement projects, so that the funds at the disposal of these two departments are utilised in the best manner possible.

(Paragraph 78)

14. In view of the satisfactory progress made in the settlement projects during the Second Plan period, the tempo of settlement work should be increased during the Third Five Year Plan.

(Paragraph 79)

15. Special attention should be given to the selection of settlers as it is the most important factor contributing to the success of a settlement project.

(Paragraph 80)

16. Settlement projects should be undertaken in those districts where the prospects of settlement are more encouraging, *i.e.,* where irrigation and good fertile land are available and the right type of settlers are forthcoming to take up cultivation, and the cost of settlement is not high, as compared to other districts.

(Paragraph 81)

17. For any settlement work to be successful, it is necessary that the Revenue/Block agency should be associated with it, so that the problems of the settlers are attended to as expeditiously as possible.

(Paragraph 82)

18. In the districts where the bulk of wastelands is found, the utilisation of wastelands involves not only reclamation but also the establishment of settlement colonies for arranging their cultivation as the size of holdings in these districts is large and there is, therefore, no desire on the part of the local settlers to move away from their existing holdings. The settlement of landless labourers and the members of the Scheduled Castes and the Scheduled Tribes is, however, a social problem, and the expenditure on this account should accordingly be treated separately from the cost of reclamation, which alone should be considered in determining the economic aspects of a reclamation project.

(Paragraph 85)

19. Of the total area of 2,55,137 acres of wastelands offered for reclamation in the different districts, the cost of reclaiming 53,512 acres located in the districts of Chhindwara, Raisen, Betul, Panna and Satna will exceed Rs. 250 per acre. These lands are badly eroded and are covered with thick jungle growth. In the circumstances, no expenditure should be incurred on the reclamation of these wastelands.

(Paragraph 86)

20. Crop-cutting surveys may be conducted in the reclaimed lands during the Third Five Year Plan, particularly in the districts of Guna, Shivpuri and Morena, where large blocks of wastelands are likely to be taken up for reclamation.

(Paragraph 87)

21. The cost of reclaiming 2,01,625 acres (excluding 53,512 acres which cannot be reclaimed at economic cost) comes to about Rs. 2·51 crores, *i.e.,* about Rs. 125 per acre. The estimated additional production from the reclaimed lands is about 46,600 tons valued at about Rs. 1·51 crores. Thus, the value of production will cover the cost of reclamation in two to three crop seasons.

(Paragraph 89)

22. The wastelands offered in the districts of Shivpuri, Guna, Damoh and Rewa seem to be very promising in increasing agricultural production, since the cost of reclaiming the lands is about Rs. 100 per acre, and there

are also large areas of these wastelands, which have fertile alluvial or black soils. In the Guna district, however, there is scarcity of drinking water, and a rapid survey of the ground-water resources would be necessary before undertaking any large-scale operations for reclaiming wastelands.

(Paragraph 90)

23. In the district of Morena, the cost of reclamation is rather high, *i.e.,* Rs. 225 per acre, but the estimated additional production of about 8 maunds per acre will pay off the cost of reclamation in two or three crop seasons. Further, there are some blocks in this district which will be commanded by the Chambal River project during the Third Plan period, and they should, therefore, receive high priority in the reclamation programme of the State. The wastelands in the Raigarh, Raipur, Bhind and Chhatarpur districts, which are capable of yielding about 8—10 maunds of foodgrains per acre, should be taken up for reclamation early. The cast of reclaiming wastelands in the districts of Vidisha, Dewas, Gwalior, Sehore, Seoni and Betul ranges from Rs. 50 to Rs. 100 per acre, but the additional production will hardly be 3-4 maunds per acre. Reclamation of wastelands in Tikamgarh may be taken up only when irrigation becomes available. The wastelands in the Jhabua district should not be taken up for reclamation for the present as the estimated production is low due to the gravelly nature of the soil.

(Paragraph 91)

24. Based upon the average cost of reclamation per maund of additional production and the rainfall and soil conditions obtaining in the different districts, we suggest the following order of priorities:—

District	Priority	Area (acres)
Chhatarpur, Riagarh, Bhind, Vidisha Raipur, Shivpuri, Seoni, Rewa, Gwalior, Morena, Guna and Surguja	I	1,89,037
Dewas, Raisen, Damoh and Sehore	II	9,066
Tikamgarh and Jhabua	III	3,522

(Paragraph 93)

Sd./-
(B. N. UPPAL)
Chairman

Members . . . .
Sd./-
1. (J. P. MITAL)
2. *Sd/-*
(F. C. GERA)
Sd/-
3. (M. S. V. Rama Rao)

Co-opted members .
Sd./-
1. (P. S. BAPNA)
Development Commissioner, Govt. of Madhya Pradesh.

Sd./-
2. (R. C. MURAB,)
Secretary,
Agriculture & Forest Deptt., Government of Madhya Pradesh.

Sd./-
3. (N. D. GUPTA,)
Revenue Secretary,
Government of Madhya Pradesh.

Sd./-
4. (M. L. SOOD,)
Chief Engineer,
P.W.D. (Irrigation)
Government of Madhya Pradesh.

Sd./-
5. (J. K. VERMA,)
Director Land Records, Government of Madhya Pradesh.

(*Sd.*)
(A. S. VENU GOPALAN)
Secretary.

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APPENDICES

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
SECRETARY.

NO. F.1024/SPL/59
GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)
New Delhi, June 11, 1959.

My dear,

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories:

(a) lands which are really adjuncts of village abadis and are meant to serve as pastures and fuel forests or sites for the extension of the abadis; and

(b) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee:—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become

available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committee will consist of the following:—

Chairman

1. Dr. B. N. Uppal, Agricultural Commissioner, Government of India.

Members

2. *Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India.
3. Shri F. C. Gera, Chairman, Central Tractor Organisation.
4. Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation.

In addition, the Committee will co-opt in individual States the following officers:—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full co-operation and provide the necessary facilities for the work of this Committee.

Yours sincerely,
Sd./- K. R. Damle.

Chief Secretaries,

All States and Union Territories.

*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd Feb., 1960 *vide* Memo. No. 12-1/59-GMF(Co) dated the 3rd February, 1960 (copy enclosed).

No. 12-1/59-GMF (Co)

GOVERNMENT OF INDIA,
MINISTRY OF FOOD & AGRICULTURE,
(DEPARTMENT OF AGRICULTURE)

New Delhi, the 3rd February, 1960

SUBJECT:—*Reclamation of culturable waste lands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F. 1024/SPL/59 dated the 11th June, 1959, referred to therein:—

> "Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Government of India, in place of Dr. J. K. Basu since retired".

Sd./- V. Balasubramanian,
Under Secretary.

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APPENDIX B

Questionnaire issued by the Wastelands Survey and Reclamation Committee

1. What is the total area of culturable wasteland in your State?

(Culturable waste land is defined as under:—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE:

DISTRICT:

Details in respect of Block No. ———— *consisting of* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?

11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the Colonization operations in the block successfully?

12. If so, what would be the likely cost of acquisition?

13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted?

14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.

15. Whether the land could be reclaimed with the use or manual labour or will it require reclamation by heavy tractors, if the former, is adequate labour locally available?

16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.

17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block?

18. What is the type of soil in the block? (alluviums, black, red or lateritic).

19. Is the land flat or gently sloping or steep? What is the depth of the soil?

20. What crops are grown in the area round about the block?

21. What is the yield per acre of each crop?

22. What is the nearest marketing centre for these crops?

23. What is the extent and distribution of rainfall in the area?

24. Can irrigation facilities be made available for the block? If so, what kind of facilities?

25. Whether these irrigation facilities will be perennial or non-perennial?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year Plan will cover this land?

27. What is the depth of sub-soil water? Is water sweet or brackish?

28. Are anti-malarial operations necessary in the area for successful colonization?

29. Is any endemic disease prevalent in the area? If so, do the State Government contemplates any measures to combat this disease?

30. Is drinking water available in the block?

31. Are there any drinking water wells in use?

32. Is the area subject to depredations of wild animals? If so, what animals?

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33. Is the block likely to attract settlers from distant places in the State or from other States?

34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block?

35. Do you think educated unemployed could be successfully settled in the block?

36. What should be the unit of allotment per settler?

37. Would you suggest that the settlers should put up their homo-steads on allotted lands, or would you like to set up *abadis* for them? If the latter, what should be the unit of allotment for residential purposes in the village *abadi*?

38. Would it be necessary to organise any training for the settlers, before they are allotted land? (the settlement will be on co-operative basis).

39. Any other details which you may like to give in the light of the terms of reference.

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APPENDIX 'C'

DR. B. N. UPPAL,
Chairman, Wastelands Survey
& Reclamation Committee.

D.O. NO. F.   /59-WLS & RC.

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
DEPARTMENT OF AGRICULTURE
'KRISHI BHAVAN' NEW DELHI

January 2, 1960
Paus 12, 1881.

Dear Shri

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable waste land in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore,decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,

Sd/- B. N. UPPAL.

All Liaison Officers in the States and Union Territories.

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APPENDIX D

Average yield (in lbs.) per acre of the principal crops in Madhya Pradesh (1959-60)

Sl. No.	District/Cop	Rice	Jowar*	Bajra	Maize	Wheat*	Koden-kutki	Gram	Ground nut	Sesamum	Mustard	Lin-seed*	Cotton*
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Sagar	394	857	431	899	616	123	435	598	50	222	212	150
2	Damoh	430	900	672	1,080	714	123	474	485	62	219	149	150
3	Jabalpur	480	854	443	771	716	197	952	629	69	259	190	150
4	Mandla	546	922	..	848	741	180	552	560	69	307	152	150
5	Hoshangabad . . .	587	739	419	617	581	88	379	435	94	..	190	57
6	Narsimhapur . . .	671	886	519	851	634	97	452	484	115	..	190	150
7	East Nimar (Khandwa) .	447	723	402	1,587	664	101	521	394	73	..	152	136
8	Balaghat	864	845	..	707	375	136	474	503	139	344	138	150
9	Betul	559	398	348	514	552	136	375	431	60	..	145	150
10	Chhindwara . . .	403	671	413	578	558	122	438	530	68	265	167	153
11	Seoni	694	591	..	642	549	154	454	563	60	234	152	150
12	Durg	897	762	204	706	522	217	489	444	63	313	182	150
13	Raipur	747	840	..	706	343	150	369	701	63	284	148	150
14	Bilaspur	753	922	560	771	564	244	552	528	75	288	136	150
15	Surguja	581	806	305	848	535	129	319	440	75	309	161	150
16	Raigarh	670	803	260	848	504	136	438	551	69	313	149	150

APPENDIX D—*contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
17	Bastar	1,007	845	..	771	488	162	336	448	63	250	124	150
18	Bhind	728	990	734	1,680	842	256	793	..	137	292	310	150
19	Morena	1,531	610	539	681	813	336	593	821	181	339	305	150
20	Gwalior	1,174	934	577	1,144	870	249	457	821	116	407	294	150
21	Shivpuri	866	278	524	547	689	250	525	866	178	277	220	150
22	Guna	693	466	408	547	497	376	467	287	133	415	587	150
23	Bhilsa	433	531	..	820	766	130	876	429	44	139	293	150
24	Rajgarh	356	506	187	281	1,124	..	425	297	173	215	227	134
25	Shajapur	642	628	619	562	739	..	553	668	91	584	302	172
26	Ujjain	347	523	524	820	565	213	525	722	222	381	367	143
27	Ratlam	390	334	210	433	739	157	638	676	112	213	220	111
28	Mandsaur	520	331	302	735	571	..	425	386	152	373	258	83
29	Dewas	442	570	419	342	718	365	630	647	130	249	378	126
30	Indore	260	456	417	547	622	..	420	216	109	187	293	135
31	West Nimar	433	315	245	363	767	125	446	528	133	149	295	239
32	Dhar	469	208	144	241	550	128	332	350	148	240	232	117
33	Jhabua	383	573	328	373	364	186	315	449	146	201	290	123
34	Rewa	466	550	419	683	644	258	491	336	56	139	220	150
35	Satna	520	631	418	684	563	250	486	427	67	191	220	150

APPENDIX D—*contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
36	Sidhi	867	865	416	478	605	305	420	..	144	346	183	150
37	Shahdol	629	806	509	1,073	761	231	486	825	139	346	183	150
38	Datia	302	786	314	545	851	158	552	640	118	277	238	150
39	Tikamgarh	867	1,100	303	409	851	438	630	589	133	236	220	150
40	Chhattarpur . . .	1,899	943	207	682	608	244	525	845	199	137	217	150
41	Panna	520	865	522	81	729	298	631	498	133	277	439	150
42	Sehore	673	601	381	327	771	175	589	313	83	242	215	69
43	Raisen	673	661	465	327	843	176	708	316	63	233	393	150
	State . .	742	557	475	578	680	196**	554**	465	121**	300**	215	150

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*Based on results of crop cutting experiments.

**Represent yield per acre of reporting areas only.

APPENDIX E

Land utilisation statistics for Madhya Pradesh for the year 1959-60 (district-wise)

District	Total geographical area		Forests	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
	By professional survey	By village paper		Barren and uncultur-able land	Land put to non-agricul-tural uses	Culturable waste	Permanent pastures and other grazing lands	Land miscella-neous tree crops and groves			
1	2	3	4	5	6	7	8	9	10	11	12
Sagar .	25,35,046	25,34,730	7,30,856	21,644	1,02,186	1,43,661	4,85,517	16,486	20,772	44,558	9,69,050
Damoh .	18,08,979	17,97,578	6,74,459	41,566	71,197	1,57,319	1,83,866	18,247	19,303	44,166	5,87,455
Jabalpur .	25,07,750	25,01,252	5,38,085	62,509	1,35,525	1,80,341	2,67,994	48,558	86,167	1,46,212	10,35,861
Mandla .	32,81,075	32,76,801	15,12,367	41,240	1,36,601	1,70,027	1,45,820	11,753	3,51,076	1,19,883	9,07,917
Hoshangabad .	24,75,059	24,68,057	9,03,945	37,634	1,17,504	1,20,273	2,26,028	16,771	25,688	49,437	9,70,777
Narsimphur .	12,66,643	12,68,064	3,08,651	16,362	56,823	69,024	1,33,897	21,485	16,388	31,957	6,13,477
East Nimar .	26,44,378	26,40,536	11,47,766	36,344	1,14,754	21,948	2,77,844	22,072	22,077	26,781	9,70,950
Balaghat .	22,86,989	22,49,117	10,48,850	1,02,449	1,17,985	97,619	1,54,573	24,482	21,938	37,763	6,43,458
Betul .	24,85,914	24,90,337	8,40,367	14,056	1,08,354	1,54,294	2,85,714	6,192	66,803	1,02,154	9,12,403
Chhindwara .	29,21,914	29,27,154	10,77,578	36,733	1,23,598	1,72,226	2,07,983	12,313	80,524	1,04,450	11,11,749
Seoni .	21,60,423	21,50,830	7,30,170	13,893	1,02,501	1,42,867	1,74,049	8,937	62,430	1,16,251	7,99,732
Durg .	48,48,678	48,00,187	12,40,139	58,002	2,64,103	98,169	3,30,784	26,783	1,27,281	1,48,658	25,06,268

APPENDIX E—*contd.*

1	2	3	4	5	6	7	8	9	10	11	12
Raipur .	52,56,698	54,46,489	21,98,498	49,630	2,84,000	1,11,982	4,67,596	6,303	85,597	88,436	21,54,447
Bilaspur .	48,73,734	49,77,852	18,26,675	1,04,924	2,40,305	1,34,435	5,17,709	16,203	75,546	96,300	19,65,755
Surguja .	55,18,733	54,81,906	28,73,885	1,51,400	1,82,268	4,60,679	2,24,636	2,15,365	83,449	72,157	12,18,067
Raigarh .	32,40,947	32,03,888	11,99,207	77,294	1,32,479	1,18,803	2,01,861	86,956	1,05,261	1,03,608	11,78,419
Bastar .	96,79,213	96,81,728	69,55,011	2,14,027	80,445	1,94,784	2,46,672	1,86,865	1,26,527	1,72,201	15,06,196
Bhind .	11,02,496	11,00,415	5,076	13,931	61,749	40,551	77,067	1,070	5,960	4,548	7,64,463
Morena .	28,72,659	28,87,389	7,89,246	4,97,493	1,62,761	3,35,644	2,08,845	7,008	23,856	20,255	8,42,281
Gwalior .	12,81,043	12,89,645	2,71,954	2,11,847	41,815	1,31,570	75,618	528	17,263	32,005	5,07,045
Shivpuri .	25,51,270	25,23,588	4,59,345	2,63,676	1,58,204	6,54,807	1,96,246	2,186	53,287	83,229	6,52,609
Guna .	27,33,491	27,13,541	3,36,805	3,86,257	1,01,793	4,52,135	1,88,137	6,986	31,162	2,76,603	9,33,663
Vidisha .	18,17,011	18,04,467	1,65,699	1,20,662	81,392	3,35,866	1,39,918	1,133	15,858	27,722	9,16,217
Rajgarh .	15,25,293	15,14,081	28,327	63,930	79,092	1,95,603	4,07,692	44	10,991	19,818	7,08,584
Shajapur .	15,28,493	15,26,365	.	2,18,546	58,420	1,39,279	2,99,693	248	7,114	14,863	7,88,202
Ujjain .	15,10,605	15,01,970	10,829	72,865	55,973	2,95,282	1,01,091	166	9,746	10,278	9,45,746
Ratlam .	11,04,986	12,01,926	60,798	96,013	54,735	98,110	2,96,988	199	11,747	7,895	5,75,441
Mandsaur .	25,38,125	23,38,806	2,69,441	3,31,584	2,03,029	3,96,718	1,80,894	2,047	15,663	11,311	9,28,119
Dewas .	17,31,571	16,52,876	3,97,472	90,759	82,766	2,03,722	1,61,640	574	14,183	13,413	6,88,347
Indore .	9,46,662	8,76,413	58,997	7,847	51,057	1,87,697	27,568	1,075	3,499	4,494	5,34,179
West Nimar .	33,29,530	24,00,898	2,92,640	1,09,471	1,09,793	2,72,172	1,67,068	5,877	13,603	19,177	14,11,097

APPENDIX E—*contd.*

1	2	3	4	5	6	7	8	9	10	11	12
Dhar .	20,16,301	20,37,856	1,70,431	2,39,936	89,063	93,430	3,56,579	399	24,711	19,607	10,43,700
Jhabua .	16,74,144	16,78,544	2,35,093	3,27,127	83,808	1,25,984	1,59,821	17	48,181	37,630	6,60,883
Rewa .	16,05,491	15,53,668	1,09,947	1,78,957	87,812	1,06,054	26,318	18,369	63,808	1,37,856	8,24,547
Satna .	18,06,995	18,34,408	3,66,732	2,05,085	1,11,623	81,613	68,350	14,206	48,068	1,99,566	7,39,165
Sidhi .	25,98,675	25,27,796	11,03,314	2,46,487	92,229	1,69,239	13,809	1,954	78,579	1,64,077	6,58,108
Shahdol .	34,63,546	34,26,525	14,01,526	1,98,505	12,669	1,57,667	96,587	3,886	1,34,103	2,81,281	10,29,301
Datia .	5,00,762	5,02,830	61,332	19,724	36,900	14,775	13,445	357	11,967	55,520	2,88,810
Tikamgarh .	12,43,808	12,46,720	1,04,789	1,52,154	62,562	1,20,495	2,60,788	64	34,694	1,12,158	3,99,016
Chhatarpur .	21,63,174	21,31,407	86,694	2,57,432	1,11,093	1,32,497	3,45,541	366	77,131	5,15,762	6,04,891
Panna .	17,38,112	17,84,832	2,51,655	2,54,277	67,384	4,37,679	25,441	2,551	39,918	2,81,761	4,24,166
Sehore .	23,04,243	23,08,593	5,80,989	65,668	1,06,658	5,10,533	1,22,634	..	10,133	29,624	88,354
Raisen .	20,93,843	20,97,700	8,66,964	13,572	76,154	1,99,377	1,60,055	235	7,148	21,078	7,53,117
State .	10,95,74,502	10,83,59,771	3,42,92,604	58,49,511	47,22,162	84,36,950	87,10,376	8,17,316	19,57,957	40,17,863	3,95,55,032

APPENDIX F

Statement showing the details of blocks offered for reclamation in the different districts

District	Name of block	No. of block	Nearest Railway Station	Whether accessible by all/fair weather road	Whether included in C.P. Block	Area (acres)	Amount of rainfall (inches)	Depth (in ft) and nature of sub-soil water	Endemic diseases
1	2	3	4	5	6	7	8	9	10
								Sweet	
Chatharpur	Buxwaha . . .	1	Damoh	Fair weather	Yes	2718	45	30	No
	Jagra	2	Damoh	Fair weather	Yes	653	45	30	No
Morena	Basantpur . . .	3	Vijayapur	Fair weather	No	1350	30	50	No
	Piparwas . . .	4	Vijayapur	No road	No	2903	30	40	No
	Dhauri Bawadi . .	5	Ikdari	Fair weather	No	1580	30	200	No
	Ghunghas . . .	6	Sillipur	Fair weather	No	1100	30	200	No
	Dhaundha . . .	7	Mohana	No road	No	3193	30	60	No
	Kalakhet . . .	8	Morena	No road	No	1719	25	60	No
	Gadhala . . .	9	Shivpur	No road	No	1283	33	120	No
	Khojipura . . .	10	Khojipura	Fair weather	Yes	4057	25	150	No
	Bagdia . . .	11	Khojipura	No road	Yes	4278	25	120	No
	Bagdia Samadhu . .	12	Khojipura	No road	Yes	617	25	120	No
	Dhirauli . . .	13	Khojipura	all weatehr	Yes	5712	25	50—90	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Jamurdi I . . .	14	Khojipura	all weather	Yes	449	25	Sweet 90	No
	Jamurdi II . . .	15	Khojipura	No road	Yes	2147	25	90	No
	Avani Talvadi . .	16	Girdharpur	No road	Yes	376	25	90	No
	Bhilkapur I . .	17	Sheopur	all weather	Yes	406	25	60—75	No
	Bhilkapur II . .	18	Sheopur	all weather	Yes	886	25	75	No
	Mayapur . . .	19	Sheopur	all weather	No	1268	25	50	No
	Utanbada I . . .	20	Sheopur	all weather	No	1439	25	40—45	No
	Utanbada II . .	21	Sheopur	all weather	No	268	25	30—40	No
	Patna	22	Sheopur	No road	No	271	25	60	No
	Patna and Nayaganj .	23	Sheopur	No road	No	312	25	45—60	No
	Rajpura . . .	24	Sheopur	No road	No	321	25	75	No
	Bhawarkua . . .	25	Sheopur	No road	No	893	25	45	No
	Sanswara . . .	26	Sheopur	No road	No	405	25	45	No
	Bagharra . . .	27	Jaura	No road	No	258	30	40	No
	Nichali . . .	28	Jaura	No road	No	560	..	37	No
	Karsa	29	Jaura	No road	No	304	30	37	No
	Dhubini . . .	30	Jaura	No road	No	517	30	30	No
	Umrai . . .	31	Jaura	No road	No	317	30	30	No
	Paal	32	Teht	No road	No	256	30	30	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
								Sweet	
Raigarh	Rakena . . .	33	Jaura	Fair weather	No	627	30	45	No
	Orethi . . .	34	Jaura	Fair weather	No	296	30	30	No
	Chaureka . . .	35	Sillipur	Fair weather	Yes	275	32	45	No
	Pura	36	Sillipur	All weather	Yes	781	45	45	No
	Auchha . . .	37	Sillipur	..	No	734	30	45	No
	Lonjhar . . .	38	Shyampur	..	Yes	312	30	120	No
	Sillipur . . .	39	Shyampur	..	Yes	281	30	165	No
	Akoda	40	Shyampur	..	Yes	291	30	33	No
	Parwati Baroda . .	41	Tentara	..	Yes	454	30	60	No
	Dongarpur . . .	42	Iqdori	Fair weather	Yes	254	30	200	No
	Kudumkela . . .	43	Raigarh	All weather	Yes	1390	40—50	10	No
	Pausalda . . .	44	Raigarh	All weather	Yes	300	50	30—40	No
	Kosamghat . . .	45	Raigarh	All weather	Yes	300	50	50—60	No
	Sarangpani . . .	46	Zharsukhera	Fair weather	Yes	700	50—60	40	No
	Purang . . .	47	Kharssih	Fair weather	Yes	300	70	40—50	No
	Puri	48	Raigarh	All weather	Yes	300	50	40—50	No
	Kudumkela . . .	49	Raigarh	All weather	Yes	300	40—50	40—50	No
Bhind	Dankdroua . . .	50	Soni	All weather	Yes	235	40	N.A.	No
Bhilsa . .	Haripur . . .	51	Garu, Basoda	No road	Yes	300	40	40—70	No
	Kadarpur . . .	52	Garu Basoda	No road	Yes	256	40	40—70	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Narayanpur	53	Basoda	No road	Yes	252	40—45	Sweet 30	No
Chhindwara	Mokarkund	54	Peparia	All weather	Yes	303	45—50	35—40	No
Raipur	Khudiadin	55	Mahasasmund	Fair weather	No	300	50	40	No
Dewas	Panjaria	56	Indore	All weather	Yes	287	30—40	30—40	No
	Sitapuri	57	Choral	Fair weather	Yes	274	30—40	30—40	No
	Shampura	58	Barwah	Fair weather	Yes	259	30—40	15—20	No
	Ahirkiwas Khurd	59	Indore	Fair weather	Yes	500	30—40	20—30	No
	Paraspipri	60	Indore	Fair weather	Yes	500	30—40	30—40	No
	Kalamatalai	61	Indore	No road	Yes	500	30—40	30—40	No
	Siralibir	62	Choral	Fair weather	Yes	400	30—40	25—30	No
Raisen	Bagwara	63	Gadarwara	No road	Yes	284	40—50	40	No
	Bhoocieta	64	Salamatpur	Fair weather	Yes	256	45—50	35	No
	Chitoda	65	Ibadulganj	All weather	No	286	45	60	No
	Alampur	66	Diwanganj	Fair weather	Yes	264	60	40	No
Tikamgarh	Bangain	67	Newari	Fair weather	Yes	320	36—43	40	No
	Dargaun Bhata		Newari	Fair weather	Yes	332	36—43	40	No
	Toria		Newari	Fair weather	Yes	257	36—43	40	No
	Saidry		Jhansi	Fair weather	Yes	344	36—43	40	No
	Sunari Bhata		Newari	Fair weather	Yes	302	36—43	40	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Darbar Crungle		Teharka	Fair weather	Yes	359	36—43	Sweet 40	No
	Teharka Bhata		Teharka	Fair weather	Yes	345	36—43	40	No
	Kathan Paheri		Teharka	Fair weather	Yes	341	36—43	40	No
Damoh	Khutiguni	68	Damoh	All weather	Yes	788	50	45	No
	Komarkala	69	Damoh	No road	Yes	1402	N.A.	20	No
	Chopra	70	Damoh	No road	Yes	272	50	30	No
	Patharia	71	Damoh	No road	No	326	55	30	No
	Singhpur	72	Damoh	No road	Yes	1818	50	50	No
Gwalior	Kaiwari	73	Raihat	All weather	No	300	N.A.	45—50	No
	Aron	74	Aron road	All weather	No	250	N.A.	45—50	No
Shivpuri	Dhol	75	Chorepura	Fair weather	Yes	537	N.A.	N.A.	No
	Rampur	76	Satanwara	No road	Yes	254	34	N.A.	No
	Bilookhoh	77	Satanwara	No road	Yes	254	34	N.A.	No
	Raipur	78	Satanwara	No road	Yes	350	34	N.A.	No
	Bhesora	79	Chorpura	No road	Yes	442	34	N.A.	No
	Barkhari	80	Chorepura	No road	Yes	474	..	N.A.	No
	Dongri	81	Chorepura	All weather	Yes	564	34	N.A.	No
	Chorepura	82	Chorepura	..	Yes	480	34	N.A.	No
	Karpara	83	Shivpuri	Fair weather	Yes	587	34	N.A.	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
								Sweet	
	Niwazpur	84	Shivpuri	No road	Yes	539	34	N.A.	No
	Dhuwani	85	Shivpuri	No road	Yes	539	34	N.A.	No
	Karai	86	Shivpuri	No road	Yes	434	34	N.A.	No
	Surwaya	87	Shivpuri	No road	Yes	1146	34	N.A.	No
	Baraipura	88	Shivpuri	No road	Yes	373	23—75	N.A.	No
	Surajpur	89	Shivpuri	No road	No	730	23—75	N.A.	No
	Tihahone Saloda	90	Shivpuri	No road	No	400	23—75	N.A.	No
	Lagra charch	91	Shivpuri	No road	No	640	23—75	N.A.	No
	Charch Galthaipur	92	Shivpuri	No road	No	584	23—75	N.A.	No
	Nangarh Dathora	93	Shivpuri	All weather	No	306	23—75	N.A.	No
	Dohha	94	Shivpuri	No road	No	1095	23—75	N.A.	No
	Dong Barvary	95	Shivpuri	No road	No	1384	23—75	N.A.	No
	Markheda	96	Shivpuri	No road	No	692	23—75	N.A.	No
	Aswaya	97	Shivpuri	No road	No	628	23—75	N.A.	No
	Narainpura	98	Shivpuri	No road	No	396	23—75	N.A.	No
	Rampura	99	Shivpuri	No road	No	385	23—75	N.A.	No
	Pahsrawan	100	Shivpuri	No road	No	388	23—75	N.A.	No
	Kishanpur Dhowani	101	Mohna	No road	No	456	23—-5	N.A.	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Bilowa Bahu . .	102	Shivpuri	No road	No	780	23—75	Sweet N.A.	No
	Babloon . . .	103	Shivpuri	No road	No	493	23—75	N.A.	No
	Khatka . . .	104	Mohna	No road	No	325	23—75	N.A.	No
	Hosaipur . . .	105	Beadar	No road	No	943	23—75	N.A.	No
	Indurkhi . . .	106	Shivpuri	No road	No	252	23—75	N.A.	No
	Dagdoli . . .	107	Shivpuri	No road	No	512	23—75	N.A.	No
	Devpur kala . .	108	Mohna	No road	No	400	23—75	N.A.	No
	Kanlthri . . .	109	Shivpuri	No road	Yes	349	33	34—50	No
	Samina . . .	110	Guna	No road	..	149	33	30—40	No
	Sitokan . . .	111	Guna	No road	Yes	456	33	30—40	No
	Gudhal . . .	112	Guna	No road	Yes	281	33	30—40	No
	Ranjha . . .	113	Guna	No road	Yes	268	25—30	30	No
	Kumrua . . .	114	Shivpuri	No road	Yes	294	33	30	No
	Keldhar . . .	115	Shivpuri	No road	Yes	690	33	30—40	No
	Kirola . . .	116	Guna	No road	Yes	427	5—30	30—40	No
	Beerpur Khu . .	117	Datia	No road	Yes	290	36	20—30	No
	Amhai . . .	118	Baran	No road	No	275	..	50—60	Yes
	Pahara khurd . .	119	Basai	No road	No	410	30	50—60	Yes
	Mahua . . .	120	Basai	No road	No	275	30	25—60	Yes
Sehore	. Bijla	121	Budni	All weather	Yes	277	30—50	30—40	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
									Sweet
	Khadabad	122	Budni	All weather	Yes	387	30—50	60	No
	Khádabad	123	Budni	All weather	Yes	263	30—50	60	No
	Pilikarar	124	Budni	All weather	Yes	261	30—50	30	No
	Bordhi	125	Budni	All weather	Yes	269	30—50	80	No
Jhabua	Dudhi-teh-Jhabua	126	Meghnagar	All weather	Yes	284	30	60—70	No
	Amankua	127	Dohad	No road	No	638	30	60—70	No
Seoni	Damijhola	128	Hagar Bada	All weather	No	385	50—60	N.A.	No
	Khapa	129	Kavdari	All weather	No	381	50—60	N.A.	No
Betul	Gargud	130	Betul	No road	No	479	45	38	No
	Bakhed	131	Betul	No road	No	298	45	38	No
	Balkheda	132	Betul	Fair weather	No	409	25	18	No
	Dunda Boorgaon	133	Betul	Fair weather	No	300	40—45	40	No
Panna	Rampur I	134	Satna	Fair weather	Yes	260	45	60	Yes
	Rampur II	135	Satna	Fair weather	Yes	400	45	60	Yes
	Marha	136	Satna	Fair weather	Yes	344	45	60	Yes
	Khamari	137	Satna	Fair weather	Yes	678	45	60	Yes
	Majloli	138	Satna	Fair weather	Yes	298	45	60	Yes
	Dodi	139	Satna	Fair weather	Yes	335	45	60	Yes
	Rajpura	140	Satna	Fair weather	Yes	257	45	60	Yes

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Siri I	141	Satna	Fair weather	Yes	322	45	Sweet 60	Yes
	Siri II	142	Satna	Fair weather	Yes	268	45	60	Yes
	Siri III	143	Satna	Fair weather	Yes	341	45	60	Yes
	Panna I	144	Satna	Fair weather	Yes	252	50	50	No
	Panna II	145	Satna	Fair weather	Yes	381	50	50	Yes
	Panna III	146	Satna	Fair weather	Yes	274	50	50	Yes
	Panna IV	147	Satna	All weather	Yes	328	50	45	Yes
	Janwar I	148	Satna	Fair weather	Yes	417	45	50	Yes
	Janwar II	149	Satna	Fair weather	Yes	703	45	50	Yes
	Janwar III	150	Satna	Fair weather	Yes	765	45	50	Yes
	Janwar IV	151	Satna	Fair weather	Yes	769	45	50	Yes
	Janwar V	152	Satna	Fair weather	Yes	705	45	50	Yes
	Dhangarh 1	153	Satna	Fair weather	Yes	738	45	60	Yes
	Barachh	154	Satna	Fair weather	Yes	313	45	60	Yes
	Kakarhati 1	155	Satna	Fair weather	Yes	841	45	40	Yes
	Kakarhati 2	156	Satna	Fair weather	Yes	440	45	40	Yes
	Mohanpura	157	Satna	Fair weather	Yes	774	45	40	Yes
	Mutavan 1	158	Satna	Fair weather	Yes	524	45	60	Yes
	Mutavan 2	159	Satna	Fair weather	Yes	283	45	60	Yes
	Basai	160	Satna	Fair weather	Yes	416	45	60	Yes
	Bagohan	161	Satna	Fair weather	Yes	307	45	45	Yes

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
Panna (*contd.*)	Hinanta	162	Satna	Fair weather	Yes	435	45	Sweet 45	Yes
	Madaian	163	Satna	Fair weather	Yes	262	45	45	Yes
	Mahguvan	164	Satna	Fair weather	Yes	425	45	45	No
	Basriya	165	Satna	Fair weather	Yes	449	45	45	No
	Kharguvan I	166	Satna	Fair weather	Yes	765	45	45	No
	Kharguvan II	167	Satna	Fair weather	Yes	493	45	45	No
	Banghi	168	Satna	Fair weather	Yes	460	45	45	No
	Ahirguvan	169	Satna	Fair weather	Yes	301	45	45	No
	Virsinghpur	170	Katni	Fair weather	No	290	35	..	No
	Pagra	171	Damoh	Fair weather	No	255	35	60—70	No
	Gudha	172	Damoh	Fair weather	No	378	35	60—70	No
	Gajanda	173	Rithi	Fair weather	No	534	35	60—65	No
	Vikrampur	174	Satna	All weather	Yes	1118	45	50	Yes
	Janwar-6	175	Satna	Fair weather	Yes	2758	45	50	No
	Dhangarh-2	176	Satna	Fair weather	Yes	1252	45	60	No
	Jhalai-1	177	Satna	Fair weather	Yes	1783	45	60	No
	Jhalai-2	178	Satna	Fair weather	Yes	2735	45	60	No
Satna	Nivi	179	Majhgava	Fair weather	Yes	1679	45	40	No
	Athuvari	180	Jaitwara	Fair weather	Yes	365	43	100	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Kachura . . .	181	Jaitwara	Fair weather	Yes	485	43	100	No
	Lalpur . . .	182	Jaitwara	Fair weather	Yes	427	43	100	No
	Khangarh . . .	183	Satna	Fair weather	Yes	287	43	80	No
	Kalhara North . .	184	Jaitwara	Fair weather	Yes	294	43	68	No
	Kathara . . .	185	Jaitwara	Fair weather	Yes	382	43	66	No
	Chakar . . .	186	Jaitwara	Fair weather	Yes	277	43	100	No
	Shahpur . . .	187	Majhgava	Fair weather	Yes	880	43	60	No
	Nardaha . . .	188	Majhgava	No road	Yes	675	43	60	No
	Barodha . . .	189	Majhgava	Fair weather	Yes	988	43	60	No
	Padhre . . .	190	Majhgava	Fair weather	Yes	829	43	60	No
	Manni . . .	191	Maihar	Fair weather	No	423	43	36	No
	Deera	192	Uchehra	Fair weather	Yes	313	45	50—60	Yes
	Mahraj . . .	193	Satna	Fair weather	No	292	33	50	Yes
	Shivrajpur . . .	194	Satna	Fair weather	Yes	261	42	60	Yes
	Gandha . . .	195	Satna	Fair weather	Yes	431	42	60	Yes
	Chor	196	Satna	Fair weather	Yes	267	42	60	Yes
	Uraichuva . . .	197	Maihar	Fair weather	Yes	310	42	120	Yes
	Madhkani . . .	198	Satna	Fair weather	Yes	354	42	60	Yes
	Kudia	199	Satna	Fair weather	Yes	271	42	60	Yes
	Aama	200	Satna	Fair weather	No	295	42	50	Yes
	Singhpur . . .	201	Satna	All weather	No	313	42	50	Yes

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
								Sweet	
	Jharsi	202	Satna	All weather	No	473	42	50	Yes
	Mahten I . . .	203	Satna	All weather	No	416	42	50	Yes
	Mahten II . . .	204	Satna	All weather	No	420	42	50	Yes
	Durgapur . . .	205	Satna	Fair weather	No	350	42	50	Yes
	Nabasta . . .	206	Satna	Fair weather	Yes	499	42	50	Yes
	Kadimanu . . .	207	Satna	Fair weather	Yes	337	42	50	Yes
	Chopra . . .	208	Satna	Fair weather	No	372	42	50	Yes
	Umdhor . . .	209	Maihar	Fair weather	Yes	912	33	30—40	No
	Parasmania . . .	210	Uchehra	Fair weather	No	565	33	50	No
	Mura	211	Devendranagar	Fair weather	Yes	1386	42	60	Yes
	Baghar . . .	212	Maihar	Fair weather	Yes	720	42	120	Yes
	Durgapur . . .	213	Shivrajpur	Fair weather	No	1593	42	60	Yes
	Navasta . . .	214	Rodh	Fair weather	Yes	2136	42	50	Yes
	Kadhamanu . . .	215	Rodh	Fair weather	Yes	771	42	50	Yes
	Chopra . . .	216	Singhpur	All weather	No	509	42	50	Yes
	Tundune Matra . .	217	Satna	Fair weather	No	2920	42	50	Yes

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
								Sweet	
Rewa	Vichihar	218	Damora	No road	No	416	45	20	No
	Tilo	219	Damora	No road	No	442	45	20	No
	Virpur	220	Damora	Fair weather	No	433	45	20	No
	Pera	221	Shankargarh	No road	No	356	45	20	No
	Vareti Kalan	222	Vadgarh	Fair weather	No	252	45	60	No
	Rang Patera	223	Vadgarh	Fair weather	No	355	45	60	No
	Baron	224	Vadgarh	Fair weather	No	253	45	30	No
	Ghateeha	225	Vadgarh	No road	Yes	864	45	30	No
	Dainoria	226	Damora	Kachchi	No	534	45	50	No
	Ghuman	227	Damora	No road	No	945	45	20	No
	Akoria	228	Damora	No road	No	513	45	20	No
	Gurdari	229	Damora	No road	No	517	45	100	No
	Badachoha	230	Vadgarh	Fair weather	No	613	45	60	No
	Sohkha	231	Vadgarh	Fair weather	Yes	574	45	30	No
	Sohabal Khurd	232	Damora	Fair weather	No	527	45	20	No
Guna	Sarkhera	233	Guna	No road	No	1,627	30	60—80	No
	Tilli	234	Guna	No road	No	1,927	30	60—80	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Chattarpur . . .	235	Guna	No road	No	1,331	30	Sweet 60—80	No
	Kumhari . . .	236	Guna	No road	No	3,115	30	60—80	No
	Tulankhera . . .	237	Guna	No road	No	1,974	30	60—80	No
	Ratwara . . .	238	Guna	No road	No	1,460	30	60—80	No
	Khoari. . . .	239	Guna	No road	No	1,586	30	60—80	No
	Bahban . . .	240	Guna	No road	No	2,786	30	60—80	No
	Jaitpura . . .	241	Guna	No road	No	1,794	30	60—80	No
	Aklon	242	Guna	No road	No	405	33—40	60—80	No
	Ikodia	243	Guna	No road	No	1,000	33—40	60—80	No
	Umradha . . .	244	Guna	No road	No	439	33—40	60—80	No
	Kaksubadeng . .	245	Guna	No road	No	938	33—40	60—80	No
	Anrad	246	Guna	No road	No	1,067	33—40	60—80	No
	Kapasi . . .	247	Guna	No road	No	1,187	33—40	60—80	No
	Kabar Bamori . .	248	Guna	No road	No	1,913	33—40	60—80	No
	Kankra . . .	249	Guna	Fair weather	No	240	33—40	60—80	No
	Kilampur . . .	250	Guna	No road	No	480	33—40	60—80	No
	Karinodi . . .	251	Guna	All weather	No	2,060	33—40	60—80	No
	Kalora . . .	252	Guna	Fair weather	No	963	33—40	60—80	No
	Kanthi Sirsi . . .	253	Guna	No road	No	272	33—40	60—80	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Kalechari . . .	254	Guna	No road	No	650	33—40	60—80	No
	Karili	255	Guna	No road	No	507	33—40	60—80	No
	Kolua	256	Guna	All weather	No	764	33—40	60—80	No
	Kumhari . . .	257	Guna	No road	No	2,828	33—40	50—60	No
	Khadela . . .	258	Guna	All weather	No	697	33—40	40—45	No
	Khera	259	Guna	No road	No	1,456	33—40	40—45	No
	Kharawata . . .	260	Guna	No road	No	443	33—40	40	No
	Khinya Sirsi . .	261	Guna	No road	No	379	33—40	40	No
	Khori . . .	262	Guna	No road	No	1,085	33—40	40—45	No
	Gadariya Kodar . .	263	Guna	No road	No	347	33—40	40—45	No
	Ganesh Khera . .	264	Guna	No road	No	510	33—40	40—45	No
	Gehun Khera . .	265	Guna	No road	No	297	33—40	40—50	No
	Chak Porkho . .	266	Guna	No road	No	450	33—40	40—50	No
	Chandera Sirsi . .	267	Guna	No road	No	673	33—40	40—50	No
	Chitodi . . .	268	Guna	No road	No	340	33—40	40—50	No
	Chhakari . . .	269	Guna	No road	No	704	33—40	40—50	No
	Jaitpur (Padom) . .	270	Guna	No road	No	1,546	33—40	40—50	No
	Johari . . .	271	Guna	No road	No	517	33—40	40—50	No
	Jalampur . . .	272	Guna	No road	No	1,151	33—40	N.A.	No

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APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
								sweet	
	Taknera	273	Guna	No road	No	507	33—40	N.A.	No
	Jhumka	274	Guna	All weather	No	570	33—40	N.A.	No
	Jibi	275	Guna	No road	No	1,927	33—40	N.A.	No
	Tulya Khera	276	Guna	No road	No	1,974	33—40	N.A.	No
	Jhedora	277	Guna	Fair weather	No	344	33—40	N.A.	No
	Dumanwan	278	Guna	No road	No	749	33—40	N.A.	No
	Dungarara	279	Guna	All weather	No	601	33—40	N.A.	No
	Dongri	280	Guna	No road	No	1,059	33—40	N.A.	No
	Dongarpur	281	Guna	All weather	No	665	33—40	N.A.	No
	Tulsyai	282	Guna	All weather	No	293	33—40	N.A.	No
	Dilwada	283	Guna	No road	No	604	33—40	N.A.	No
	Jhumda	284	Guna	All weather	No	256	33—40	N.A.	No
	Zarapur	285	Guna	All weather	No	672	33—40	N.A.	No
	Dinola	286	Guna	No road	No	1,239	33—40	N.A.	No
	Deopur Khyavada	287	Guna	Fair weather	No	423	33—40	N.A.	No
	Deopur	288	Guna	All weather	No	586	33—40	N.A.	No
	Dehri (Fategarh)	289	Guna	All weather	No	1,054	33—40	N.A.	No

APPENDIX F—*contd,*

1	2	3	4	5	6	7	8	9	10
	Deogarh(Harigarh) . .	290	Guna	No road	No	832	33—40	N.A.	No
	Dhamoua Padon . .	291	Guna	No road	No	725	33—40	N.A.	No
	Nihalgarh . . .	292	Guna	No road	No	252	33—40	N.A.	No
	Nimeri I . . .	293	Guna	All weather	No	367	33—40	N.A.	No
	Nagda . . .	294	Guna	No road	No	293	33—40	N.A.	No
	Nimeri II . . .	295	Guna	All weather	No	288	33—40	N.A.	No
	Nakhoda . . .	296	Guna	No road	No	852	33—40	N.A.	No
	Nighera . . .	297	Guna	No road	No	343	33—40	N.A.	No
	Nohar . . .	298	Guna	No road	No	473	33—40	N.A.	No
	Pipaiya Sisi . . .	299	Guna	No road	No	420	33—40	N.A.	No
	Porkho . . .	300	Guna	No road	No	1,036	33—40	N.A.	No
	Panheti . . .	301	Guna	No road	No	394	33—40	N.A.	No
	Parat	302	Guna	No road	No	1,774	33—40	N.A.	No
	Fategarh . . .	303	Guna	No road	No	1,472	33—40	N.A.	No
	Baniyani Padom . .	304	Guna	No road	No	1,009	33—40	N.A.	No
	Banda(Fategarh) . .	305	Guna	No road	No	390	33—40	N.A.	No
	Badera . . .	306	Guna	No road	No	300	33—40	N.A.	No
	Baghoniya . . .	307	Guna	All weather	No	1,231	33—40	N.A.	No
	Badanpur . . .	308	Guna	No road	No	647	33—40	N.A.	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Vishanpada . . .	309	Guna	No road	No	309	33—40	sweet N.A.	No
	Bithalpur . . .	310	Guna	No road	No	336	33—40	N.A.	No
	Bavroda . . .	311	Guna	No road	No	322	33—40	N.A.	No
	Biroli . . .	312	Guna	No road	No	389	33—40	N.A.	No
	Bila B Bawadi . .	313	Guna	All weather	No	330	33—40	40—50	No
	Bongar Biran . .	314	Guna	No road	No	686	33—40	40—50	No
	Bbothpura . . .	315	Guna	No road	No	1,397	33—40	50	No
	Bhadora . . .	316	Guna	No road	No	285	33—40	50	No
	Makara Bada . .	317	Guna	All weather	No	356	33—40	50	No
	Magroda . . .	318	Guna	All weather	No	2,791	33—40	50	No
	Mahera . . .	319	Guna	No road	No	427	33—40	50	No
	Mumdol . . .	320	Guna	All weather	No	311	33—40	50	No
	Markiman . . .	321	Guna	No road	No	1,287	33—40	50	No
	Musedi . . .	322	Guna	No road	No	942	33—40	50	No
	Majraniya . . .	323	Guna	All weather	No	403	33—40	50	No
	Mana . . .	324	Guna	No road	No	611	33—40	50	No
	Mahua Khera . .	325	Guna	No road	No	1,200	N.A.	50	No
	Mandai . . .	326	Guna	All weather	No	340	N.A.	50	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Majhol . . .	327	Guna	No road	No	446	N.A.	50	No
	Morkheri Bamoni .	328	Guna	No road	No	317	N.A.	50	No
	Rehpur . . .	329	Guna	No road	No	479	N.A.	50	No
	Ratanpur . . .	330	Guna	No road	No	315	N.A.	50	No
	Rajpur . . .	331	Guna	No road	No	365	N.A.	50	No
	Rai	332	Guna	No road	No	657	N.A.	50	No
	Laharkota . . .	333	Guna	No road	No	313	N.A.	50	No
	Ladakheda . .	334	Guna	No road	No	1,055	N.A.	50	No
	Laxmipur . .	335	Guna	No road	No	397	N.A.	N.A.	No
	Lohari Padom . .	336	Guna	No road	No	1,151	N.A.	N.A.	No
	Sulai . . .	337	Guna	All weather	No	540	N.A.	N.A.	No
	Sanwada . . .	338	Guna	No road	No	539	N.A.	N.A.	No
	Simroda . . .	339	Guna	No road	No	414	N.A.	N.A.	No
	Silavati (Padom) . .	340	Guna	No road	No	887	N.A.	N.A.	No
	Salaiyarsoa . . .	341	Guna	No road	No	410	N.A.	N.A.	No
	Silavati (Padom) . .	342	Guna	No road	No	887	N.A.	N.A.	No
	Salaiyarao . . .	343	Guna	No road	No	410	N.A.	N.A.	No
	Sissikhas . .	344	Guna	No road	No	424	N.A.	N.A.	No
	Samarsinga . . .	345	Guna	All weather	No	538	N.A.	N.A.	No

APPENDIX F—*contd.*

1	2	3	4	5	6	7	8	9	10
	Sileta	346	Guna	No road	No	628	N.A.	Sweet 50	No
	Semara Fategarh	347	Guna	No road	No	370	N.A.	50	No
	Suatore	348	Guna	No road	No	1,243	N.A.	50	No
	Khotkhara	349	Guna	No road	No	369	N.A.	50	No
	Saretha	350	Guna	No road	No	529	N.A.	50	No
	Sagai	351	Guna	No road	No	433	N.A.	N.A.	No
	Sandkheda	352	Guna	No road	No	684	N.A.	N.A.	No
	Sayar Talate	353	Guna	All weather	No	308	N.A.	N.A.	No
	Shekhpur	354	Guna	All weather	No	331	N.A.	N.A.	No
	Hanuman Kheda	355	Guna	No road	No	349	N.A.	N.A.	No
	Hinoniya Bamoni and	356	Guna	All weather	No	390	N.A.	N.A.	No
	Harkal		Guna	No road	No	1,174	N.A.	N.A.	No
	Hamuman Kheda Padon	357	Guna	No road	No	634	N.A.	N.A.	No
	and Ratwara		Guna	No road	No	1,459	N.A.	N.A.	No
Surguja	Narbadapur	358	Kharsia	Fair weather	Yes	503	N.A.	N.A.	No
	Kamleshwarpur	359	Kharsia	Fair weather	Yes	394	N.A.	N.A.	No
	Kuniya	360	Kharsia	Fair weather	Yes	492	65	25	No
	Rupakhar	361	Kharsia	Fair weather	Yes	287	N.A.	N.A.	No

N.A.—Not Available.

APPENDIX G

Statement showing the break-down of waste lands according to ownership in the areas offered for reclamation

District	Block No.	Total area of block (acres)	Area (in acres) belonging to Private individuals	Government	Bhoodan Organisation
(1)	(2)	(3)	(4)	(5)	(6)
1. Chhatarpur	1-2	3,371	32	3,339	..
2. Morena	3—42	43,749	499	37,157	6,093
3. Raigarh	43—49	3,590	..	3,590	..
4. Bhind	50	235	..	235	..
5. Vidisha	51—53	808	808	..	..
6. Chindwara	54	303	..	303	..
7. Raipur	55	300	..	300	..
8. Dewas	56—62	2,720	..	2,720	..
9. Raisen	63—66	1,089	550	539	..
10. Tikamgarh	67	2,600	..	2,600	..
11. Damoh	68—72	4,606	..	4,606	
12. Gwalior	73-74	550	..	550	..
13. Shivpuri	75—120	22,925	9	22,916	..
14. Sehore	121-125	1,456	1,456	..	
15. Jhabua	126-127	922	..	922	..
16. Seoni	128-129	766	216	550	..
17. Betul	130—133	1,486	..	1,486	..
18. Panna	134—178	27,439	..	27,439	..
19. Satna	179—217	25,458	75	25,383	..
20. Rewa	218—232	7,619	7,549	70	..
21. Guna	233—357	1,01,469	..	1,01,469	..
22. Surguja	358—361	1,676	..	1,676	..
TOTAL	..	2,55,137	11,194	2,37,850	6,093

APPENDIX H

Model scheme for settlement of landless labourers on a cooperative basis

Large areas of wastelands in blocks of 250 acres or more are lying uncultivated in the different districts of Madhya Pradesh mentioned on page 12 of the report, particularly in the districts of Morena, Shivpuri and Guna. The lands are infested with shrubs, bushes and jungle, and will, in most cases, require to be reclaimed with the help of heavy tractors. These lands belong mostly to the Government. The average cost of reclamation is Rs. 125 per acre.

It is proposed to settle on these lands landless labourers, scheduled castes and tribes, agricultural graduates, etc., on a co-operative basis. The scheme proposed here gives in broad outlines the different steps to be taken in establishing colonies of settlers co-operatively. It is not intended to present a rigid scheme as the flexibility of details to suit local conditions is the *sine qua non* of the success of settlement schemes.

The co-operative method of organisation can be applied in settlement work in the following manner:—

(i) Land may be individually owned but jointly operated (that is, co-operative joint farming).

(ii) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members.

The broad outlines of each of these patterns are indicated below:

Pattern I: Individually owned but jointly operated.

The co-operative joint farming settlement envisages that the ownership of the land will vest in the individual, but cultivation will be carried on jointly.

Allotment of land:

The unit of land for allotment to each individual landless person shall be as follows:—

(a) In rice tract ..	10 acres of dry land.
(b) In wheat, jower or cotton tract ..	15 acres of dry land.
(c) In minor millets tract ..	20 acres of dry land.

In the case of agricultural graduates, however, who wish to take up farming as a vocation, the unit of allotment will be 30 acres.

Explanation.—For the above purpose, one acre of wet land shall be reckoned as equivalent to two acres of dry land.

The allottees will have the right to alienate their lands after they have paid back all the advances made to them by the Government. The land to be granted to each settler should be on impartible tenure. The allottes will pay land revenue on the following scale:

1st year—No land revenue.

2nd year—1/3 of the assessed land revenue.

3rd year—2/3 of the assessed land revenue.

4th year onwards—Full land revenue.

It would be obligatory on the part of the settler to cultivate the land himself or with the help of his family members.

Method of working.

A co-operative society will be formed, of which each settler shall be a member. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 20 per member.

The society will formulate a production plan through its elected Managing Committee. The Committee may formulate the day-to-day working plan for the members, either by forming some special groups or on an *ad hoc* basis. The means of cultivation, *i.e.,* seeds, fertilizers, implements, bullocks, etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amounts of subsidies received from the Government towards the wages of labour, maintenance expenses, etc., would be availed of for this purpose. The crop would be jointly harvested, and the income would be disbursed among the members after deducting the expenditure incurred by the society.

The agricultural officer attached to a group of five societies will provide the necessary technical guidance with regard to the formulation of the production programme, rotation of crops, use of fertilizers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the society would keep the necessary accounts, etc.

The social amenities, reclamation charges, follow-up cultivation charges, maintenance expenses and the administrative set-up for the organisation of the scheme will be as under:—

Social amenities:

(i) *Homestead.*—About 1/5th of an acre of land may be allotted as homestead plot. The value of the plot is estimated at Rs. 20.

(ii) *House building.*—A sum of Rs. 1,000 may be advanced to each family towards the cost of building a house. A further sum of Rs. 1,000 may be provided for preparing a layout of each colony of 50 families. The cost per family on this account will be Rs. 20.

(iii) *Provision of drinking water.*—Two wells are proposed to be dug for each colony of 50 families at a cost of Rs. 8,000. The cost per family will be Rs. 160.

(iv) *Development of communications.*—A sum of Rs. 10,000 may be allotted for the development of communications to the colonies. This is an essential item of expenditure as the communications are poor in these areas. The expenditure per family will work out to Rs. 200.

Reclamation charges:

A sum of Rs. 1,100 per family may be provided for this purpose. This will be sufficient in most cases, but in areas where the reclamation charges are likely to be more, a larger provision may be made.

Follow-up cultivation charges:

The following amounts may be provided per family for follow-up cultivation:—

(i)	One pair of bullocks and agricultural implements ..	Rs. 600
(ii)	Fodder, etc. ..	Rs. 200
(iii)	Seed ..	Rs. 150
	TOTAL ..	Rs. 950

Maintenance expenses:

It is necessary to advance to settlers some money for maintenance during the first year at the rate of Rs. 50 per family. Provision on this account may be made at Rs. 600 per family.

Pattern of assistance:

The financial assistance for implementing the scheme would be as under:

	Loan	Grant
	Rs.	Rs.
I. *Individual members*		
(*a*) Share capital	20	..
(*b*) Homestead plot and house	320	700
TOTAL	340	700
II. *Through the co-operative society*		
(*a*) Layout of colony	..	20
(*b*) Drinking water supply	..	160
(*c*) Development of communications	..	200
(*d*) Reclamation charges	..	1,100
(*e*) Follow on cultivation		
(*i*) Bullocks and implements	600	..
(*ii*) Fodder for bullocks, etc.	200	..
(*iii*) Seed	150	..
(*f*) Maintenance expenses	600	..
(*g*) Working capital for cottage	200	..
(*h*) Protection from wild animals	..	200
(*i*) Panchyat Bhawan	..	100
(*j*) Administrative set up	..	50
TOTAL	1,750	1,650

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Conditions for the grant of loans to the landless labourers:

The procedure for the grant of loans and their recovery and the interest thereon will be according to the rules under the Land Improvement Loans Act, with the following exceptions:—

(i) The land allotted will be the security for the loans and no other security will be taken.

Provision for cottage industry, poultry, etc.:

A sum of Rs. 200 may be advanced to each settler towards the working capital of a cottage industry, poultry, etc.

Panchayat Bhawan:

A common building at a cost of Rs. 5,000 may be constructed for every 50 families, which will serve as a Panchayat Bhawan. The expenditure per family will be Rs. 100.

Protection from wild animals:

Since the colonies will be located in places infested with wild animals, it is necessary to make provision for guns, etc. A sum of Rs. 1,000 may be provided for this purpose for each colony of 50 families, the cost per family being Rs. 20.

Administrative set-up:

A sum of Rs. 50 (one manager on Rs. 100 per month plus D.A. and one-fifth the pay of Agricultural Officer at Rs. 200 per monts, plus D.A. Approximately Rs. 2,500 for each colony) will be spent per family towards the cost of the administrative staff for the execution of the settlement scheme.

To sum up, the details of expenditure per family on the various items will be as under:—

(a) Value of land	..	Rs. 2,000
(b) Social amenities	..	Rs. 1,520
(c) Reclamation charges	..	Rs. 1,100
(d) Follow-on cultivation charges	..	Rs. 950
(e) Maintenance expenses	..	Rs. 600
(f) Provision for cottage industry etc.	..	Rs. 200
(g) Administrative set-up	..	Rs. 50
TOTAL	..	Rs. 6,420

(ii) The period of repayment of loans will be ten years commencing from the third year.

(iii) The settlers who are to be settled under the colonisation scheme shall be Government lessees under Section 181 of the Madhya Pradesh Land Revenue Code, 1959. The settlers shall pay land revenue in respect of the land allotted to them as per rules framed under Section 162 of the Land Revenue Code (for the payment of land-revenue) and the settlers shall be given *bhoomiswami* rights after they begin to pay full land-revenue according to the rules framed for the purpose.

Pattern II: Individual farming with the help of a service cooperative.

Membership would be open to all the settlers to whom the land has been granted in the area of operation of the society. It may be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the society. The co-operative caters to the needs of the members, particularly those relating to credit for agricultural production, and supplies of agricultural requisites, such as fertilizers, improved seeds, insecticides, etc., and of domestic requirements. The society will arrange for the marketing of the agricultural produce of its members.

Allotment of land:

The scale and conditions of allotment of land to individuals will be as indicated in pattern I. The difference would be that the land will be operated individually with the help of a service co-operative.

Method of working:

Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 20 per member. The maintenance expenses given to each family will be deposited with the society; the society will release the amount to the member concerned as and when needed. The society, if required by the members, may also provide domestic requirements against their deposits.

One agricultural officer will supervise the work of a group of societies. He will assist each society in drawing up a production plan, and all agricultural operations which will be carried out by the members in accordance with this programme. The society will supply fertilizers, improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members may bring their produce to the society which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by the Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

The social amenities, reclamation charges, follow-up cultivation charges, maintenance expenses and the administrative set-up will be as under:—

Social amenities:

(i) *Homestead.*—About 1/5th of an acre of land may be allotted as a homestead plot to each settler. The value of the plot is estimated at Rs. 20.

(ii) *House building.*—A sum of Rs. 750 may be advanced to each family towards the cost of building a house.

(iii) *Provision of drinking water.*—A drinking water well at a cost of Rs. 4,000 would be sunk for every 25 settlers. The cost per family on this account will be Rs. 160.

Reclamation charges:

A sum of Rs. 1,100 may be provided for clearance and ploughing up of land. In certain cases the cost of reclamation may be more, when a larger provision may be made.

Follow-up cultivation charges:

The following amounts will be required by each settler for undertaking follow-up cultivation:—

(i) A pair of bullocks and implements	..	Rs. 750
(ii) Seed	..	Rs. 150
TOTAL	..	Rs. 900

Maintenance expenses:

A sum of Rs. 250 may be provided to each settler towards his maintenance expenses during the first year.

Provision of capital for cottage industry, poultry, etc.:

A sum of Rs. 200 may be provided towards the working capital for a cottage industry, poultry, etc.

Administrative set-up:

A sum of Rs. 50 (one manager on Rs. 100 per month plus D.A. and one-fifth the pay of Agricultural officer at Rs. 200 per month plus D.A. Approximately Rs. 2,500 for each colony) will be spent per family.

To sum up, the details of expenditure per family on the various items will be as under:—

	Rs.
(*a*) Value of land	2,000
(*b*) Social amenities	930
(*c*) Reclamation charges	1,100
(*d*) Follow-on cultivation expenses	900
(*e*) Maintenance expenses	250
(*f*) Provision for capital for cottage industry, poultry, etc.	200
(*g*) Administrative set-up	50
TOTAL	5,430

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Pattern of assistance :

The financial assistance for implementing the scheme will be given to individuals as well as to co-operative societies as under:—

	Loan	Grant
	Rs.	Rs.
I. *Individual members*		
(*a*) Share capital	20	..
(*b*) Homestead plot and house	270	500
TOTAL	290	500
II. *Through the co-operative society*		
(*a*) Drinking water supply	..	160
(*b*) Reclamation charges	..	1,100
(*c*) Follow-on cultivation expenses	900	..
(*d*) Maintenance expenses	250	..
(*e*) Working capital for cottage Industry, poultry, etc.	200	..
(*f*) Administrative set-up	..	50
TOTAL	1,350	1,310

The procedure for the grant of loans and their recovery and the interest thereon will be as given for pattern I.

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Appendix I

A brief review of the colonisation and settlement work in Madhya Pradesh

Past work

The work of colonisation of aboriginal and nomadic tribes and Scheduled Castes and ex-servicemen has been in operation in the erstwhile Gwalior State since 1903. A scheme for the settlement of landless persons was also launched in the former Madhya Pradesh and Bhopal States in the beginning of the Second Five Year Plan. The operations in the former Gwalior State and subsequently in the former Madhya Bharat State were carried out under the guidance of a wing in the Directorate of Agriculture. The work in the former Madhya Pradesh areas was executed by the Collectors under the direct administrative orders of the Revenue Department. The operations were not well organised and directed and the work was not sufficiently co-ordinated with the result that the progress was slow and halted. The whole work in all the constituent units of the present Madhya Pradesh State received a fillip after it was placed under the charge of the Directorate of Land Records in October, 1957.

2. To trace the history and progress of the operations, we may begin with a reference to the manual for demarcation and allotment of culturable wasteland which was introduced in the former Gwalior State in 1912 and subsequently elaborated in 1923. Each settler was allotted about 33 bighas (16.5 acres) of culturable land and was required to bring one-fourth of it under the plough within a period of three years, one-half in six years, three-fourths in nine years and the whole within a period of twelve years. He deposited with the Government as a security a nominal amount of Rs. 0·50 nP. per bigha which was refundable with interest after the necessary conditions were fulfilled, but was liable to forfeiture in the event of default. The settler was required to pay no land revenue for the first twelve years, one-fourth land revenue upto twentieth year, half land revenue upto twenty-fifth year and full land revenue thereafter. No irrigation charges were also levied for the first five years. The settler was allowed to collect wood and building material from the neighbouring forests and quarries for construction of houses and wells. If the settlers formed a co-operative society, they got loans from co-operative banks also.

3. A colony of 250 settlers was established where an area of about 10,000 bighas (5,000 acres) of culturable land was available. Such a colony was ordinarily provided with a post office, school and police station, etc. An officer known as Colony Officer with suitable staff was placed in charge of the welfare of the settlers in each colony. He was required to maintain law and order in the colony and recover the land revenue. He was invested with judicial and revenue powers.

The operations were continued in the Madhya Bharat State more or less on the same lines. The settlers were given further financial assistance for clearance of land, construction of huts and sinking of wells. But due to various reasons, the achievements were not spectacular. An area of 1,78,803 bighas (89,401 acres) only could be brought under plough in the former Gwalior State and an area of 13,000 bighas (6,500 acres) was allotted for habitation and 527 pattas were issued to ex-servicemen and others thereafter in the Madhya Bharat State. During the First Plan period 264 families in nine colonies were settled. They were allotted an area of 2,749 acres.

Progress under the Second Plan

The operations in the region were magnified under the Second Plan in which it was aimed to settle 500 families into colonies of 20 to 25 families each at a cost of Rs. 18·00 lakhs. About 20 acres of land is allotted to each family and Rs. 4,100 is given by way of grants and loans as per details given below:

		Grant	Loan	Period of repayment of loan
			Rs.	Rs.
1.	Clearance and ploughing of 20 acres @ Rs. 60/- per acre . . .	1,200	..	..
2.	Land improvement @Rs. 50/- per acre .	500	500	10 years
3.	Construction of house . . .	500	..	..
4.	One pair of bullocks . . .	..	500	3 years
5.	One bullock cart . . .	..	150	3 years
6.	Agricultural implements . .	..	100	3 years
7.	Seeds	..	125	Next harvest
8.	Food for six months . .	..	250	Do.
9.	Fodder for bullocks . . .	..	100	Do.
10.	Agricultural labour	..	100	Do.
11.	Medical aid for malaria etc. . .	..	75	3 years
	TOTAL	2,200	1,900	

An expenditure of Rs. 5,960 is also granted for each colony of 20—25 settlers for provision of following common amenities: —

	Rs.
(1) Construction of drinkig water well	4,000
(2) Construction of a shed for social and cultural activities and recreation	1,000
(3) Protection of crop from wild animals :—	
(a) Purchase of one gun	600
(b) Purchase of cartridges	360
TOTAL.	5,960

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In the Mahakoshal region the work of settlement of landless persons on an organised basis was started only under the Second Plan. Since culturable wastelands in very large blocks are not available in this area due to already extensive cultivation the operations here are confined to allotment of land to landless persons on individual basis. Under the Second Plan it is intended to settle 700 families in compact or scattered blocks of land of 100 acres each at a cost of Rs. 23·03 lakhs. Government land to the extent of being cultivated by one pair of bullocks is allotted to one family. This area roughly works out to 10 acres in rice tract, 15 acres in cotton and juar tracts and 20 acres in poor soil tracts. The land is reclaimed at Government expense which generally does not exceed Rs. 80 per acre, before it is allotted. Each allottee is also given a loan of Rs. 1,700 for purchase of bullocks and agricultural implements and for building a house, and half the amount spent on building the house is treated as grant, provided it is properly and fully utilised. The amount of loans is recovered in 10 annual instalments commencing from the second year.

Although no scheme of settlement of landless persons is in operation in the Vindhya Pradesh region, a target for the settlement of 760 families of landless labourers at a total cost of about Rs. 34·30 lakhs in the Bhopal region was fixed for the Second Plan. Each family is allotted 15 acres of land and a provision of Rs. 4,780 as grants and loans as per details given below:—

	Grant	Loan
	Rs.	Rs.
1. Purchase of bullocks, bullock-cart and agricultural implements	..	600
2. Construction of well	500	1,500
3. Subsistance loan of Rs. 30 - p.m. till the first harvest .	..	180
4. Construction of houses	500	..
5. Tractorisation @ Rs. 100/-per acre	1,500	..
TOTAL . . .	2,500	2,280

7. Besides, an additional amount of Rs. 22,000 is also provided for common amenities for the colony:—

	Rs.
(i) School	6,000
(ii) Teachers' quarters	3,000
(iii) Dispensary	8,000
(iv) Drinking water well	4,000
(v) Lay-out	1,000
TOTAL . .	22,000

No substantial progress could be made in the first year of the Second Plan partly because of administrative dislocation that followed in the wake of States Reorganisation and partly due to lack of co-ordination and proper guidance of the work. The work gathered momentum after it was placed under the single authority of the Director of Land Records. During 1956-57, no families were settled in the Mahakoshal region and only 50 families were settled in the Madhya Bharat region. However, 166 families were settled in the Mahakoshal region and 216 families in the Madhya Bharat region during the years 1957-58 to 1959-60. In the Bhopal region, the scheme could be implemented in the years 1958-59 and 1959-60 only and a total of 55 families were settled. Besides these families, 233 families of landless persons were also settled outside the plan in the Madhya Bharat region during the years 1956-57 to 1959-60. The year-wise details of the colonies established under the plan and non-plan Schemes in the recent past are set out in Appendix J.

Allotment of land on individual basis:

In addition to establishment of colonies, lands have also been allotted to individual cultivators under the orders of Collectors under the tenancies Act of the different units. The details of lands allotted so far are given in Appendix K.

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APPENDIX J

Details of colonies established in Madhya Pradesh during recent years

Sl. No.	Location of the colony	District	Class of settlers	Year of establishment	Area colonised (acres)	No. of families settled	Financial assistance povided to the settlers		
							Grant	Loan	Total
			A.—Clonies settled under normal scheme						
1	Pureni	Guna	Aboriginals	1954	214	11	..	..	..
2	Harthone	Shivpuri	Composite	1955	236	17	500	21,250	21,750
3	Dabra Dinara	Shivpuri	Composite	1955	162	21	500	26,250	26,750
4	Jargawan	Shivpuri	Composite	1955	234	26	500	32,500	33,000
5	Kakarwaya	Shivpuri	Aboriginals	1955	259	19	4,500	32,500	37,000
6	Chorpura	Shivpuri	Aboriginals	1956	141	17	3,000	30,600	33,600
7	Bhilwara	Shivpuri	Aboriginals	1956	298	27	5,560	28,350	33,910
8	Vishwanagar	Guna	Pardhi	1956	955	101	26,624	59,650	86,274
9	Gondalpur	Guna	Nut	1956	250	25	2,500	23,424	25,924
10	Bhadon	Guna	Pardhi	1957	115	20	..	5,100	5,100
11	Jhagar	Guna	Scheduled castes	1957	166	17	3,230	..	3,230
12	Mahodra	Guna	Aboriginals	1959	260	26	26,600	..	26,600
	TOTAL—NORMAL SCHEME				3,290	327	73,514	2,59,624	3,33,138

APPENDIX J—*contd.*

Sl. No.	Location of the colony	District	Class of settlers	Year of establishment	Area colonised (acres)	No. of families	Financial assistance provided to the settlers		
							Grant	Loan	Total
			B.—Colonies settled under the Plan Scheme						
1	Berasia	Shivpuri	Aboriginals	1956	249	26	2,331	12,620	14,951
2	Berikheda	Shivpuri	Aboriginals	1956	319	24	7,160	33,880	41,040
3	Paragarh	Shivpuri	Aboriginals	1957	312	25	6,540	41,125	47,665
4	Sarsveh	Guna	Aboriginals	1959	250	25	90,124	3,750	93,874
5	Morkhedi	Guna	Scheduled castes	1959	250	25			
6	Nanipura	Guna	Aboriginals	1959	250	25			
7	Garhi Bared	Shivpuri	Kanjars	1959	250	25	41,120	41,250	83,370
8	Keotapani	Dewas	Composite	1959	250	25	5,576	28,875	34,451
9	Bhagwantpur	Raisen	Composite	1959	550	20	55,544	45,600	1,01,144
10	Kukurda	Raigarh	Composite	1959	200	5	4,000	8,500	12,500
11	Kamalpur Kotmi	Surguja	Composite	1959	100	10	3,500	13,000	16,500
12	Balrampeth	Balaghat	Composite	1959	99	5	8,000	8,500	16,500
13	Kirhai Piparaiya	Jabalpur	Composite	1959	99	14	8,500	6,000	14,500
14	Bartalao	Durg	Composite	1959	96	10	7,000	..	7,000
15	Hardua	Sagar	Composite	1959	75	5	..	6,800	6,800

APPENDIX I—*contd.*

16	Udaipur	Khandwa	Composite	1959	101	10	..	9,050	9,050
17	Mardel	Bastar	Composite	1959	250	10	16,000	17,000	33,000
18	Imlidol	Damoh	Composite	1960	107	5	..	5,000	5,000
19	Karimpur	Vidisha	Composite	1960	200	20	27,960	22,500	50,460
20	Ummedgarh	Gwalior	Composite	1960	202	20	45,548	26,000	71,548
21	Mahodra	Guna	Aboriginals	1960	260	26	48,192	..	48,192
22	Deori	Narsimhpur	Composite	1960	70	5	2,500	6,000	8,500
23	Avrethi	Raipur	Composite	1960	50	5	6,500	6,000	12,500
24	Kamti	Hoshangabad	Composite	1960	110	5	4,301	..	4,301
25	Gundarai	Raisen	Composite	1960	525	35	1,11,956	79,800	1,91,756
26	Umaria	Balaghat	Composite	1960	100	11	8,000	8,500	16,500
27	Babanda	Khandwa	Composite	1960	100	5	5,500	4,600	10,100
28	Sergarh	Betul	Composite	1960	101	5	2,500	6,000	8,600
29	Kharai	Jabalpur	Composite	1960	78	9	3,640	3,621	7,261
30	Dudga	Bilaspur	Composite	1960	100	12	8,003	8,400	16,403
31	Bhua	Mandla	Composite	1960	100	10	8,000	12,000	20,000
32	Porda.	Raigarh	Composite	1960	50	5	6,500	6,000	12,500
33	Lakhanpuri and Purantarai	Bastar	Composite	1960	200	20	16,000	17,000	33,000
	TOTAL PLAN SCHEME				6,052	487	5,61,497	4,87,371	10,48,868
	TOTAL NORMAL PLAN SCHEMES				9,342	814	6,35,011	7,46,995	13,82,000

APPENDIX K

Statement showing the allotment of culturable wasteland to agriculturists during the year 1956-57, and 1958-59 *in Mahakoshal, Madhya Bharat and Bhopal regions of Madnya Pradesh.*

Region	Name of district	Culturable area allotted during years			Total area allotted during 1956-57, 1957-58 and 1958-59
		1956-57	1957-58	1958-59	
Mahakoshal region	1. Sagar	Nil	12,324	5,640	17,964
	2. Damoh	25	3,301	3,123	6,449
	3. Jabbalpur	Nil	948	2,902	3,850
	4. Mandla	Nil	2,099	5,307	7,406
	5. Hoshangabad	807	1,782	3,934	6,523
	6. Narsimhpur	1,285	1,042	892	3,219
	7. Nimar (Khandwa)	1,114	6,548	3,127	10,789
	8. Balaghat	21	2,754	1,452	4,227
	9. Betul	666	2,472	425	3,563
	10. Chhindwara	Nil	2,893	3,892	6,785
	11. Seoni	3,633	4,747	1,048	9,428
	12. Raipur	61	1,200	3,670	4,931
	13. Bilaspur	Nil	5,380	3,819	9,199
	14. Raigarh	Nil	120	50	170
	15. Bastar	Nil	52,651	36,538	89,189
	16. Durg	118	2,201	2,536	4,855
	17. Surguja	7	4,376	5,035	9,419
Madhya Bharat Region	1. Bhind	Nil	Nil	Nil	Nil
	2. Morena	4,961	22,624	8,561	36,146
	3. Gwalior	3,549	8,050	6,069	17,688
	4. Shivpuri	5,092	43,960	7,728	56,780
	5. Guna	9,112	29,293	22,316	60,721
	6. Vidisha	2,205	13,363	22,022	37,591
	7. Rajgarh	400	12,584	16,224	29,908
	8. Shajapur	351	3,656	8,473	12,480
	9. Ujjain	589	7,523	2,413	10,525
	10. Ratlam	1,889	5,234	6,063	13,296
	11. Mandsaur	438	2,390	17,572	20,400
	12. Dewas	2,104	4,958	2,238	9,300
	13. Nimar (Khargone)	1,876	8,774	10,162	20,812

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APPENDIX K (*contd.*)

Region	Name of district	Culturable area allotted during years			Total area allotted during 1956-57, 1957-58 and 1958-59
		1956-57	1957-58	1958-59	
	14. Dhar	Nil	27,695	15,629	43,324
	15. Jhabua	2,674	13,797	23,539	40,010
	16. Indore	161	2,226	453	3,040
Bhopal Region	1. Sehore	6,358	4,336	5,809	16,503
	2. Raisen	4,802	7,260	3,643	15,705
Vindhya Pradesh Region	1. Rewa	1,387	2,799	3,542	7,728
	2. Satna	3,231	3,302	2,764	9,297
	3. Sidhi	5,914	4,003	8,777	18,694
	4. Shahdol	11,618	11,197	17,079	39,894
	5. Datia	1,795	2,242	2,682	6,719
	6. Tikamgarh	10,082	8,827	14,744	23,653
	7. Chhattarpur	3,717	1,980	6,129	11,826
	8. Panna	823	1,287	4,763	6,873

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REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART VI—MADHYA PRADESH

WASTELANDS SURVEY AND RECLAMATION
COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
GOVERNMENT OF INDIA

FEBRUAR, 1961

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories:—

(a) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(b) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June, 1959, (Appendix A) with the following terms of reference:—

(i) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(ii) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(iii) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(iv) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work.

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This

questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, viz., Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which. *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem.

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under:—

(i) forests,
(ii) barren and unculturable lands,
(iii) land put to non-agricultural uses,
(iv) permanent pastures and meadows,
(v) areas under miscellaneous trees and crops,
(vi) culturable waste.

(vii) current fallows,
(viii) fallows other than current fallows, and
(ix) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for

increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PART VI

MADHYA PRADESH

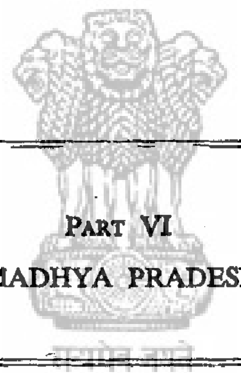
Preface

The report deals with the availability and location of wastelands in large-sized blocks in the State of Madhya Pradesh and the measures to be taken for their reclamation.

2. Before we visited certain representative areas offered for reclamation, we had a general discussion with the Liaison Officer of the State on the 23rd December, 1959, at New Delhi. Between the 27th and 30th December, 1959, and again on the 16th February, 1960, we undertook tours of the Guna and Shivpuri districts and visited the areas where wastelands were found and where some settlement schemes undertaken by the State Government were in progress. We held discussions with the District Collector, Guna, and the Revenue Secretary, Madhya Pradesh, on the 30th December at Guna regarding the availability and disposal of wastelands found in the State. On the 8th January, 1961, the draft report of the Committee relating to the State was discussed and finalised.

3. We wish to express our gratitude to Shri J. K. Verma, Director of Land Records, Madhya Pradesh, who, in his capacity as Liaison Officer, was most helpful in the collection of the data required by the Committee, and accompanied us during our tours of the areas. Our thanks are also due to Shri R. Giri and Shri S. Mulye, of the Directorate of Land Records, for furnishing the necessary statistics required by the Committee. We are also grateful to the Collectors of Guna and Shivpuri who were good enough to accompany us on our tours and showed us round the reclamation and settlement schemes in their districts.

4. We are highly indebted to Dr. S. P. Raychaudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities of the cartographic laboratory at the Institute for printing the maps included in the Report.



PART VI

MADHYA PRADESH

SECTION A

(General aspects)

General aspects

The State of Kerala has nine districts, namely, Trivandrum, Quilon, Alleppy, Kottayam, Ernakulam, Trichur, Palghat, Kozhikode and Cannanore. The total geographical area of the State is 15,000 sq. miles.

2. Kerala is the smallest State in the country. According to the 1951 census, the population of the State is 1·35 crores. It is the most densely populated State, there being 904 persons per sq. mile as against 287 persons for the country as a whole. About 13·5 per cent of the population lives in towns, whilst the remaining 86·5 per cent reside in villages. About 54 per cent of the total population depends on agriculture for their livelihood. Agricultural labour constitutes the most numerous single occupation with 21·1 per cent of the total and 39·3 per cent of the total agricultural classes.

3. Kerala is a land of mountains. Based on physical features, the State can be divided into three natural belts as follows :—

(*i*) The lowlands or the flat coastal strip,

(*ii*) The midlands consisting of the undulating hills and valleys east of the lowlands, and

(*iii*) The mountainous highlands with rich fertile lands at the foot covered with thick virgin forests, on the extreme east.

4. The backwaters are a peculiar feature of Kerala. The coastal area is fringed with backwaters, which are connected by canals, so that there is an uninterrupted inland water communication from Trivandrum to Tirur, a distance of 220 miles. The entire State is intersected by several rivers, flowing from the Western Ghats to the sea.

Climate

5. The State has a wide range of climate, from cold in the mountain to the oppressive heat of the plains. Humidity is very high. The south-west monsoon sets in about the first week of June and comes to an end in September. This is followed by the north-east monsoon. Dry weather sets in by the end of December and continues until the end of March. The rainfall is very heavy, ranging from 68″ at Trivandrum to over 200″ on the High Range in the Kottayam district. In Kerala floods cause more damage to crops than drought.

Soils

6. The soils of Kerala may be classified into alluviums, peaty soil, red soil, laterite and forest soil (*vide* Map I).

6·1. Alluvial soils are generally found along the coast in a strip running from north to south. The soil is sandy, poor in fertility and of low water-holding capacity. The water-table is near the surface. Fertile lands of sandy soils impregnated with silt are found near the mouths of rivers, and as *kole* lands in the Trichur taluka.

6·2. Peaty or *kari* soils are peculiar soil formations found in the lowland areas of Central Kerala round about Vembanad lake. The soils are black in colour, rich in organic matter and potash, but poor in available phosphates. They are highly acidic. These lands remain under water during the monsoon, and are inundated by sea-water when the rains have stopped. The main problems of these soils are high acidity, impeded drainage, and sub-soil toxicity.

6·3. Red soils occur over a greater part of the midland region, particularly in the Cannanore and Kozhikode districts. The soils are deep with a uniform texture. They are deficient in plant nutrients and organic matter. The ph of these soils is between 6 and 7.

6·4. Laterite and lateritic soils occur in a strip running from north to south, in the midland and highland regions. Both high level and low level laterites (i.e., laterites at higher elevations and at lower elevations) occur in the strip. The soil is shallow in depth. It is sandy loam to loam at higher elevations, with a harder layer below overlying the laterite. At lower elevations it is loam to clay loam with the laterite underneath. The soils are slightly acidic, and plantation crops grow well in these soils.

Irrigation

7. Of the total cropped area of 53,82,000 acres in 1956-57, 8,29,000 acres received the benefit of irrigation. The main source of irrigation is canals, which irrigated about 50 per cent of the irrigated area. Wells and tanks account for 13 per cent of the irrigated area. The main crop grown under irrigation is rice which covers about 66 per cent of the total irrigated area.

Crops grown and yields obtained

8. Rice is the principal food crop of the State, and occupied an area of 18,83,000 acres, or 35 per cent of the total cropped area, during 1956-57. The crop is grown in the summer, autumn and cold season. The other food crops are tapioca, *ragi* (*Eleusine coracana*) and jowar.

8·1. The State grows a variety of commercial crops, viz., cocoanut, arecanut, pepper, cardamom, cashewnut, lemongrass, bananas, ginger, etc. Cocoanut alone occupies an area of 11,07,000 acres, or 21 per cent of the cropped area. Tea, coffee, and rubber are other commercial crops of great economic value.

8·2. During 1956-57, the total production of rice was 8,62,000 tons, tapioca 15,69,000 tons, *ragi* 7,000 tons, and jowar 2,000 tons. Among the spices, pepper accounted for 26,800 tons, cardamom 1,242 tons, and ginger 10,700 tons. The rubber production was of the order of 21,000 tons. The average yields of the important crops grown in the different districts are given in Appendix D.

SECTION B

(Description of blocks and measures for reclamation)

Land utilisation

9. According to the land utilisation statistics, the State of Kerala has an area of 9·43 million acres classified as under :—

	Acres (million)
1. Forests	2·46
2. Land not available for cultivation—	
(*a*) Barren and unculturable land	0·50
(*b*) Land put to non-agricultural use	0·53
3. Other uncultivated land excluding fallows—	
(*a*) Culturable waste	0·44
(*b*) Permanent pastures and other grazing lands ..	0·12
(*c*) Land under miscellaneous tree crops and groves ..	0·50
4. Current fallows	0·16
5. Fallows other than current fallows	0·20
6. Net area sown	4·52
Total ..	9·43

10. It will be observed that the total area classified as "other uncultivated land excluding fallows" is 1·06 million acres, while the area classified as "fallows other than current fallows" is 0·2 million acres. The district-wise distribution of the areas under these two heads is shown in Appendix E.

11. Of the total area of 1·26 million acres under the heads "other uncultivated land excluding fallow lands" and "fallows other than current fallows", the Government of Kerala have offered only seven blocks for reclamation, comprising about 56,000 acres in blocks of the sizes of 250 acres or more. The percentage of area available in blocks of 250 acres or more to the area under culturable waste (the main head under which wastelands could be located) is thirteen per cent. On an enquiry about the remaining areas, we were informed that the figures as reported in the revenue records might be discounted, and that most of the wastelands in the State were scattered in small bits, a large proportion of which had already been brought under cultivation unauthorisedly.

12. The distribution of wastelands in the different districts is given below:

District	Block No.	Area (acres)
Kozhikode	1	3,323
Trichur	2	500
Palghat	3	500
	4	500
Ernakulam	5	500
Kottayam	6	42,604
Trivandrum	7	8,000
Total ..		55,927

12·1 We were informed that in the Kuttanad, over 1,20,000 acres were at present growing one crop of paddy since this area was subject to inundation by sea-water. It was suggested that, if suitable measures were adopted, such as the construction of bunds to prevent the ingress of salt-water and the provision of irrigation facilities, much of this area could be double-cropped. The construction of the Thottapilly spillway and the Thanirmukham barrier would bring a large proportion of this area under their irrigation command. It was estimated that at least 50,000 acres in the Upper Kuttanad could thus be easily converted into double-cropped lands at a cost of Rs. 500-600 per acre. Although these lands are being cultivated, we have considered it necessary to make a special mention of them in our report because of their great promise for increasing agricultural production by improving their potential for intensive cultivation. With the construction of bunds these marshy areas are further capable of being developed into lands suitable for cocoanut cultivation by growing paddy crops in them successively for four or five years.

13. Map II shows the location of the blocks of wastelands in the different districts.

14. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

15. *Block 1* comprising 3,323 acres, is situated in Pannikode Amsom of Tennamangalam Firka, in the Kozhikode district. The entire area is infested with weeds and shrubs and can be reclaimed with the help of manual labour which is locally available. The soil is alluvium and the land is more or less level, but in a few places, it is slightly slopy. The latter areas will have to be contour-bunded. The block is located in an area receiving a rainfall of about 110 inches. No irrigation is available. The cost of reclamation is estimated Rs. 250 per acre.

16. *Block 2* is located in village Periyaram, in Mukundapuram taluka of the Trichur district. The entire area of about 500 acres which is now with the Forest Department, is proposed to be transferred to the Revenue Department. Most of the area is already being cultivated unauthorisedly. The rainfall ranges from 130 to 150 inches. The soil is black and fertile. The land is even and there is sufficient soil-depth to support crops like paddy, tapioca, etc. Perennial irrigation facilities will be available after the completion of the second stage of the Sholayar project.

17. *Blocks 3 and 4* are located in the Attapady Valley of the Palghat district, which is a vast hilly area covered with forests. The entire valley is in the Community Development Block, Mannarghat.

17·1. *Block 3* comprising 500 acres, is located in Agali Amsom, and is bounded on the east by the Siruvani river, on the west by the Thummapare cardamom gardens and hills, on the south by the Muthukulam Reserve Forest, and on the north by private estates. The area is overgrown with trees and bushes and will have to be cleared with the help of tractors. The area receives a rainfall of 130 to 150 inches. The soil is black and very fertile. There is possibility of providing perennial irrigation from natural channels.

17·2. *Block 4* is situated in Pudur Amsom and is bounded on the east by the land adjoining Choornagada Hamlet, on the south by the hills, on the north by the Nilgiris district, and on the west by the Reserved Forest. Land reclamation will consist of jungle clearance. The area has an annual rainfall of 130 to 150 inches. The soil is black and very fertile. In this block also perennial irrigation can be provided from natural channels.

17·3. The cost of reclamation in these two blocks is estimated at Rs. 250 per acre.

17·4. As stated earlier, blocks 3 and 4 form part of the Attapady valley which is about 280 sq. miles in extent and comprises 80 sq. miles of Government forests and 200 sq. miles of private forests. According to the District Collector, Palghat, there are large areas of wastelands in the valley, but these are available mostly in blocks of less than 250 acres in extent. A rapid reconnaissance survey should be carried out to locate the blocks of wastelands, so that steps may be taken to bring them under cultivation.

17·5. The Attapady valley is situated at an elevation of 1,750 ft. to 7,000 ft. The rivers Bhawani and Siruvani flow through it. The rainfall of the valley ranges from 80 inches in the strip bordering the Coimbatore district to 200 inches in the forest areas. The tribals form the bulk of the population of 15,000 persons. They prefer shifting cultivation to permanent settlement. At present only dry crops are grown. With the construction of the road from Mannarghat to Agali and thence to Chinnathadagam in the Coimbatore district, the valley is now easily accessible. We suggest that a comprehensive scheme for the development of wastelands in the valley should be formulated, and to this end, the following steps would appear to be necessary :—

- (*a*) A rapid reconnaissance survey should be conducted for the location of wastelands in the valley.
- (*b*) Construction of bunds across the Kookampalayam and Golikkadavan streams with a view to augmenting irrigation water supply

(c) Improvement of the Anakketty-Sholayur road.

(d) Settling tribal families on the land by providing them with such amenities as houses, dispensaries, etc., and weaning them from the practice of shifting cultivation by demonstration of the improved methods of cultivation on reclaimed lands.

18. *Block 5* is located in village Elankunnapuzha, in the Ernakulam district. The block has been formed by accretion, and it is still growing in size. No survey has been conducted, but the area of the block is likely to be about 500 acres. The land is infested with bushes and shrubs and is marshy. These marshy lands will have to be filled with earth in order to make them fit for cultivation. The work of filling may be done by manual labour, but a dredger can do the work much quicker and at lower cost. The soil is alluvium and good for growing paddy. The area receives a rainfall of about 120 inches. The cost of reclamation is likely to be heavy, and it may cost Rs. 2,000 to reclaim an acre of land by manual labour.

19. *Block 6* comprising 42,604 acres of wastelands consists of five sub-blocks, and is located in the Munnar area, in the Kottayam district. This area forms part of the concessional grant of 1,37,432 acres of land in the Devicolam taluk, which was made by the then Government of Travancore to the North Travancore Land Planting and Agricultural Society Ltd. The extent of the area in each of the five sub-blocks is as shown below :—

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Sub-block	Area (acres)
A	20,806
B	13,799
C	3,558
D	2,770
E	1,671
Total	42,604

19·1. A brief description of the above five sub-blocks is given below:—

(*i*) *Sub-block A* forms the heart of the Kannan Devan Game Sanctuary and is mainly grassland rising from 3,500 ft. to 5,800 ft. The land is mostly steep, and there is sparse tree growth along the edges of ravines and streams. The top soil is hard and impermeable due to repeated fires, but the substratum is not rocky. The area is swept by winds of high velocity, which make agricultural operations difficult. Extensive wind belts will have to be established before an attempt is made to cultivate the blocks. The area receives a rainfall of about 120 inches. It is suitable for afforestation, and forest species like *Alnus nepalensis*, good for match splints, red gum and wattle may be tried.

(*ii*) *Sub-block B* is a wooded valley, which is fairly well protected from wind on all sides. The land is fertile lying between 3,000 ft. and 4,000 ft. above mean sea-level, and is intersected by several streams. Several tribal families have already settled in the area. The rainfall in the area is very heavy. About one-third of the area is suitable for growing cardamom, rubber and chickory. The area is now inaccessible from the plains as the old Kothamangalam-Munnar road is in a badly damaged condition.

(*iii*) *Sub-blocks C, D and E.*—These sub-blocks are not quite suitable for reclamation or for setting up colonisation schemes as they consist of lofty hills and steep valleys. The lands are situated at about 8,000 feet above sea-level. The climate is not healthy. The area is also infested with wild animals. According to the report of the Collector, Kottayam, even forest trees may not thrive in the area. The means of communication are poor. The cost of reclamation is likely to be high.

19·2. To sum up, it may be stated that the entire area offered for reclamation in the Kottayam district is not useful for successful agricultural operations except for a small portion in sub-block B which can be utilised for growing cardamom, rubber and chickory. The remaining areas mostly consist of lofty hills and valleys. The cost of reclamation of land situated at high altitudes will not be remunerative.

20. *Block 7* comprising about 8,000 acres is located in a narrow strip of littoral sand of an average width of one mile running from south to north, from Veli Kayal to Kadinamkulam, over a distance of 8 miles in the Trivandrum district. Irrigation can be provided by installing filter-point tube-wells. The area is suitable for establishing cocoanut plantations. The cost of irrigation is estimated at Rs. 800 per acre, in addition to an expenditure of Rs. 1,000 per acre on the digging of pits for planting, transport of manure and silt for incorporation into the sandy soils, the price of seedlings, etc.

SECTION C

(Disposal of reclaimed lands for cultivation)

21. *Nature of ownership of wastelands and their disposal for cultivation*—In the State of Kerala, the wastelands are owned by the Government and by private individuals. The break-down of wastelands according to their ownership in the different blocks is given below:—

District	Block No.	Area of block (acres)	Area belonging to	
			Private individuals (acres)	Government (acres)
Kozhikode	1	3,323	3,323	..
Trichur	2	500	..	500
Palghat	3	500	500	..
	4	500	500	..
Ernakulam	5	500	..	500
Kottayam	6	42,604	42,604	..
Trivandrum	7	8,000	..	8,000

22. The problems involved in the disposal of wastelands in these two categories are discussed below:—

22·1. *Private lands*—The entire area of 3,323 acres in the Kozhikode district belongs to a private company which holds absolute proprietary rights over it. The company is not in favour of leasing out these lands for cultivation. These lands will have to be acquired before they can be disposed of to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., for cultivation. The cost of acquisition is likely to be Rs. 200 per acre. Similarly, the lands located in the Palghat district cannot be brought under cultivation even after reclamation as the ownership of these lands is under dispute. The cost of acquisition of these lands will be about Rs. 100 per acre. The lands in block 6 are not fit for cultivation.

22·2. *Government lands*—As regards lands belonging to the Government, it may be stated that block 2 is already being cultivated unauthorisedly. The lands in block 5 are fertile and can produce good crops of paddy. These lands may be allotted after reclamation to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., or to cultivators who have no lands of their own and who may be willing to do co-operative farming under the co-operative colonisation schemes which the State Government propose to undertake during the Third Plan period. Under this scheme, each colony will be granted a loan subject to a maximum of Rs. 600 per acre of land allotted to the colony, with interest at 4 per cent. The loan will be repaid by the colony with interest over a period of 10 years.

22·2·1. During the initial period, the land may be assigned to cultivators for cultivation, and most of the services may be provided by a service co-operative. After the lapse of some time when the spirit of co-operation has developed in the colonists, co-operative farming may be encouraged. The colonists will not have the right to alienate their lands. The land to be allotted to each settler, will be heritable, but will be on impartible tenure.

22·3. As stated earlier, the lands in block 7 are suitable for growing cocoanut, but since the cost of their development is high, it is suggested that loans may be advanced to local cultivators under the horticultural development scheme, which provides for the re-payment of loans in ten annual instalments, commencing from the sixth year of the grant of loan.

23. *Crop patterns*—The general crop patterns in the Kerala State are as under:—

23·1. In Malabar, arable lands are divided into wet, dry and garden lands. Paddy is almost exclusively cultivated in wet lands, although in some areas cocoanut, arecanut and jack trees are grown in these lands. On the dry and garden lands, crops of hill paddy, *samai* (*Panicum miliare*) and gingelly are raised every few years.

23·2. Wet lands grow one crop, two crops, and sometimes three crops of paddy. Two-crop lands are common. The first crop of paddy (*kanni*) is sown in April or May, and is harvested in September or early in October. On two-crop lands the second crop of paddy (*makaram*) is sown immediately thereafter, and is harvested about the end of January. On some lands which have adequate water supply in the summer, the hot weather crop (*meda punia*) is grown after the harvesting of the *makaram* crop.

23·3. Wet cultivation in lake-beds and the back-waters (*kaval*) is a peculiar feature of the districts of Trichur, Kottayam, etc. The fields or *kols* are under water during the monsoon, and after the rains are over, strong bunds are constructed around the fields, from which the water is pumped out to make them fit for growing paddy. During the hot weather fresh water is pumped back from the natural channels into the fields to irrigate the crops.

23·4. On the low hills *modan* or hill paddy is grown. The normal rotation is *modan*, gingelly and *samai* (*Panicum miliare*), but on better types of land, a crop of ginger is grown before the *modan*.

23·5. Ginger is a valuable crop of the State. It is planted in May, and is harvested in December-January. Cocoanut thrives on the alluvial deposits of silt and sand found at the mouth of rivers and near back-waters. It is grown on the lower slopes of the lateritic hills. Tapioca is extensively cultivated in the midland belt of the coast. Cashewnut is grown in lateritic soil in situations where paddy and cocoanut cannot grow. Tea, rubber, coffee and cardamom are grown in the high ranges.

Economic aspects of reclamation

24. We shall now examine the economic aspects of reclamation in the various blocks of reclaimable lands in terms of additional production *vis-a-vis* the expenditure involved.

25. The lands in block 1 are fertile, but have no irrigation facilities. On a conservative estimate, about 800 lb. of rubber or 2 tons of tapioca. can be obtained from these lands. The lands in block 2 are already under cultivation. The valley lands included in blocks 3 and 4 can yield about 30 maunds of paddy per acre. The swampy areas included in block 5 will, after reclamation, produce paddy crops yielding 15 maunds per acre. As regards block 6, the areas offered for reclamation are not suitable for growing agricultural crops. The lands in block 7 are fit for cocoanut cultivation. The average return from a cocoanut plantation is about Rs. 400 per acre from the tenth year onwards, as against the initial expenditure of Rs. 1,800 per acre on the establishment of the plantation.

26. In order to assess the relative economic benefits of reclamation between the different blocks, the figures of estimated additional production should be studied in relation to the cost of reclamation. Table I gives the area proposed for reclamation in each block, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional production.

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TABLE I

Cost of reclamation of land in different blocks and estimated additional production

District	Block No.	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional production per acre. (maunds)	Total additional production (maunds)	Value of total additional production (Rs.)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
Kozhikode	1	3,323	250	8,30,750	55 (tapioca)	1,82,765	2,74,147	82·50	4·54
Trichur	2	500	..	..	a.	..	..	..	..
Palghat	3	500	250	1,25,000	30 (paddy)	15,000	1,87,500	375	8·33
	4	500	250	1,25,000	30 (paddy)	15,000	1,87,500	375	8·33
Ernakulam	5	500	2,000	10,00,000	15 (paddy)	7,500	93,750	187·50	133·33
Kottayam (Munnar area)	6	42,604	..	..	b.	..	..	..	..
Trivandrum (Veli-Kadnamkulam Kayal area).	7	8,000	..	..	c.	..	..	..	..
Total ..		55,927	..	20,80,750	..	37,500 (paddy) +1,82,765 (tapioca)	7,42,897	..	..

a. The area is already under cultivation.

b. These areas are not suitable for cultivation.

c. Suitable for establishing cocoanut plantation only. Reclamation highly remunerative.

Note—An average price of Rs. 1·50 per maund of tapioca and of Rs. 12·50 per maund of paddy is assumed.

27. It will be seen from the table that the cost of reclaiming 5,323 acres of land included in blocks 1 to 5 comes to Rs. 20·80 lakhs, *i.e.*, about Rs. 400 per acre. The estimated additional production from the reclaimed lands is 37,500 maunds of paddy and 1,82,765 maunds of tapioca, valued at Rs. 7·43 lakhs. Thus, the value of production will cover the cost of reclamation in two to three crop seasons.

28. As regards the economics of reclamation of the different blocks of wastelands, the lands included in blocks 2—4 would appear to be the most profitable in terms of the additional food production per acre, followed by block 1. The cost of reclamation of the marshy areas included in block 5 is heavy, and the returns are not commensurate with the expenditure involved. As regards the lands in the Munnar area of the Kottayam district (block 6), they are not suitable for cultivation. The cost of reclamation is also high.

29. In view of what has been stated in paras 25 and 28 above, we recommend that the following order of priority may be assigned to the different areas—

	Priority
Blocks 2-4 & 7	I
Block 1	II
Block 5	III

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SECTION D

(Summary of general conclusions and recommendations)

1. Of the total area of 1·26 million acres under the heads "other uncultivated land excluding fallows" and "fallows other than current fallows" only seven blocks comprising 56,000 acres have been located in the State in blocks of 250 acres or more. (Paragraph 11)

2. The distribution of wastelands in the different districts is given below:—

District	Block No.	Area (acres)
Kozhikode	1	3,323
Trichur	2	500
Palghat	3 & 4	1,000
Ernakulam	5	500
Kottayam	6	42,604
Trivandrum	7	8,000
Total		55,927

3. In the Kuttanad, over 1,20,000 acres are at present growing one crop of paddy since this area is subject to inundation by sea-water. If suitable measures are adopted, such as the construction of bunds to prevent the ingress of salt water and the provision of irrigation facilities, much of this area can be double cropped. The construction of the Thottapilly spillway and the Thanirmukham barrier will bring a large proportion of this area under their command. It is estimated that at least 50,000 acres in the Upper Kuttanad can be easily converted into double-cropped lands at a cost of Rs. 500—600 per acre. These areas are capable of being developed into lands suitable for cocoanut cultivation by growing paddy crops in them successively for four or five years. (Paragraph 12·1)

4. The lands in the Kozhikode district are infested with weeds and shrubs. The soil is fertile. No irrigation is available. The cost of reclamation is estimated at Rs. 250 per acre. (Paragraph 15)

5. Most of the lands located in the Trichur district are already being cultivated unauthorisedly. The soil is fertile. Perennial irrigation will be available after the completion of the second stage of the Sholayar project. (Paragraph 16)

6. The wastelands in the Palghat district are located in the Attapaddy valley which is a vast hilly area of about 280 sq. miles covered with forests. The soil is very fertile. There is possibility of providing perennial irrigation from natural channels. The cost of reclamation is estimated at Rs. 250 per acre. (Paragraph 17)

7. A comprehensive scheme for the development of wastelands in the Attapady valley should be formulated which would include a rapid reconnaissance survey for locating blocks of wastelands, construction of bunds across the Kookampalayam and Golikkadavu streams for augmenting irrigation water supply, improvement of Anakketty-Sholayur road, and settling tribal families on the land. (Paragraph 17)

8. The block of wastelands located in the Ernakulam district is a marshy area, and is infested with bushes and shrubs. The soil is alluvium. The cost of reclamation involving the clearance of bushes and shrubs and filling the area with earth, is estimated at Rs. 2,000 per acre. (Paragraph 18)

9. The wastelands in the Kottayam district are located in the Munnar area. The areas mostly consist of lofty hills and steep valleys and hence are not suitable for cultivation. (Paragraph 19)

10. The wastelands in the Trivandrum district are located in a narrow strip of littoral sand of an average width of one mile running from south to north, from Velikayal to Kadinamkulam. The area is suitable for establishing cocoanut plantations. The cost of irrigation is estimated as Rs. 800 per acre, in addition to an expenditure of Rs. 1,000 per acre on the digging of pits for planting, transport of manure and silt for incorporation into the sandy soils, the price of seedlings, etc. (Paragraph 20)

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11. The wastelands belonging to private individuals will have to be acquired before they can be disposed of to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc. The cost of acquisition is estimated at Rs. 100—200 per acre.

12. The lands belonging to the Government, after reclamation, may be allotted to landless labourers, members of the Scheduled Castes and the Scheduled Tribes, etc., or to actual cultivators who have no lands of their own and who may be willing to do co-operative farming under the Co-operative Colonisation Scheme proposed by the State Government to be undertaken during the Third Plan period. (Paragraphs 22·2 and 22·3)

13. The cost of reclaiming 5,323 acres of wastelands located in the districts of Kozhikode, Trichur, Palghat and Ernakulam comes to about Rs. 20·80 lakhs, *i.e.*, about Rs. 400 per acre. The estimated additional production from the reclaimed lands is 37,500 maunds of paddy and 1,82,765 maunds of tapioca valued at Rs. 7·43 lakhs. Thus the value of production will cover the cost of reclamation in two or three crop seasons. (Paragraph 27)

14. The wastelands found in the district of Trichur and Palghat would appear to be the most profitable in terms of the additional food production

per acre, followed by the block in the Kozhikode district. The cost of reclamation of the marshy area in the Ernakulam district is not commensurate with the expenditure involved. The wastelands in the Munnar area (block 6) are not suitable for cultivation.

15. The following is the order of priority assigned to the areas included in blocks 1—5, and 7.

	Priority
Blocks 2-4 & 7	I
Block 1	II
Block 5	III

(Paragraph 29)

Sd.
(B. N. Uppal)
Chairman

Members
Sd.
1. J. P. Mital
Sd.
2. F. C. Gera
Sd.
3. M. S. V. Rama Rao

Co-opted members from the State
Sd.
(C. K. Keralavarma)
Revenue Secretary
Sd.
(P. M. Mathew)
Director of Agriculture
Sd.
(T. P. Kuttiamu)
Chief Engineer (Irrigation)

Sd.
(A. S. Venu Gopalan)
Secretary

APPENDICES

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
SECRETARY.

No. F. 1024/SPL/59

GOVERNMENT OF INDIA

MINISTRY OF FOOD AND AGRICULTURE

DEPARTMENT OF AGRICULTURE

New Delhi, June 11, 1959.

MY DEAR

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be over-emphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories :

(*a*) lands which are really adjuncts of village abadis and are meant to serve as pastures and fuel forests or sites for the extension of the abadis ; and

(*b*) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement ;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultual extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter-se* between different categories of reclaimable lands.

3. The Committee will consist of the following :—

1. Dr. B. N. Uppal, Agricultual Commissioner, Government of India .. .. *Chairman*
2. *Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India .. .. .. *Member*
3. Shri F. C. Gera, Chairman, Central Tractor Organisation *Member*
4. Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation .. *Member*

In addition, the Committee will co-opt in individual States the following officers:—

1. The Development Commissioner ;
2. The Revenue Secretary ;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing wastelands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full co-operation and provide the necessary facilities for the work of this Committee.

Yours sincerely,

(Sd.) K. R. DAMLE.

Chief Secretaries,
All States and Union Territories.

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* On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd Feb., 1960 vide Memo. No. 12-1/59-GMF (Co), dated the 3rd February, 1960 (copy enclosed).

No. 12-1/59-GMF (Co.)

GOVERNMENT OF INDIA

MINISTRY OF FOOD & AGRICULTURE

DEPARTMENT OF AGRICULTURE

New Delhi, the 3rd February, 1960

SUBJECT—*Reclamation of culturable wastelands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No.F. 1024/SPL/59 dated the 11th June, 1959, referred to therein :—

"Shri M.S.V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,
in place of Dr. J. K. Basu since retired".

(Sd.) V. BALASUBRAMANIAN
Under Secretary

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APPENDIX 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee

1. What is the total area of culturable wasteland in your State ?

(Culturable wasteland is defined as under :—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands ?

3. What is the extent of land under miscellaneous trees and groves ?

4. What is the extent of fallow lands other than current fallows ?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks ?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more ? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years ? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :

DISTRICT :

*Details in respect of Block No.*______________________________*consisting of 1,000 acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area ; otherwise separate forms should be used for each block of land).

1. Where is the block located ? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block ? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block ?
4. What is the nearest Post Office and the distance of the Post Office from the block ?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block ?
6. Is the block connected by road with adjoining villages and towns ?
7. If so, is the road fair-weather or all-weather ?
8. What is the total area of the block ? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats ?
10. How much of the area is privately owned ?

11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the Colonization operations in the block successfully ?

12. If so, what would be the likely cost of aquisition ?

13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted ?

14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.

15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors ? If the former, is adequate labour locally available ?

16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded ? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.

17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block ?

18. What is the type of soil in the block ? (alluviums, black, red or lateritic).

19. Is the land flat or gently sloping or steep ? What is the depth of the soil ?

20. What crops are grown in the area round about the block ?

21. What is the yield per acre of each crop ?

22. What is the nearest marketing centre for these crops ?

23. What is the extent and distribution of rainfall in the area ?

24. Can irrigation facilities be made available for the block ? If so, what kind of facilities ?

25. Whether these irrigation facilities will be perennial or non-perennial ?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Year plan will cover this land ?

27. What is the depth of sub-soil water ? Is water sweet or brackish ?

28. Are anti-malarial operations necessary in the area for successful colonization ?

29. Is any endemic disease prevalent in the area ? If so, do the State Government contemplate any measures to combat this disease ?

30. Is drinking water available in the block ?

31. Are there any drinking water wells in use ?

32. Is the area subject to depredations of wild animals ? If so, what animals ?

33. Is the Block likely to attract settlers from distant places in the State or from other States ?

34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block ?

35. Do you think educated unemployed could be successfully settled in the block ?

36. What should be the unit of allotment per settler ?

37. Would you suggest that the settlers should put up their home-steads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi* ?

38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on cooperative basis).

39. Any other details which you may like to give in the light of the terms of reference.

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APPENDIX 'C'

DR. B. N. UPPAL,
CHAIRMAN, WASTELANDS SURVEY
& RECLAMATION COMMITTEE.

D. O. NO. F. /59-WLS & RC.

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
DEPARTMENT OF AGRICULTURE

'KRISHI BHAVAN'
New Delhi, January 2, 1960
Paus 12, 1881

DEAR SHRI

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable waste land in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly, be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,

(Sd.) B. N. UPPAL,

All Liaison Officers
in the States and Union Territories.

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APPENDIX 'D'

Average yield per acre of the principal crops in Kerala—1957-58 crops

District	Crops						
	Rice	Tapioca (lbs.)	Coconut (numbers)	Cashew-nut (lbs.)	Carda-mom (lbs.)	Pepper (lbs.)	Rubber* (lbs.)
Trivandrum	14·35	76·55	2677	17·02	..	380·3	487·2
Quilon ..	13·84	76·56	3052	17·01	..	402·3	332·4
Alleppy ..	N.A.	76·54	2983	17·01	..	402·1	..
Kottayam ..	15·27	76·57	2394	17·01	39·9	374·8	264·4
Ernakulam ..	N.A.	76·56	2919	17·01	39·8	381·3	..
Trichur ..	11·58	76·53	2690	17·01	..	215·7	202·6
Palghat ..	11·63	76·45	2768	16·99	40·3	179·3	..
Kozhikode ..	11·63	76·59	2802	17·01	40·2	180·0	..
Cannanore ..	11·61	76·82	2800	17·02	39·8	180·3	..
Malabar ..	..	..	..	..	..	..	146·9
State ..	12·40	76·56	2794	17·01	39·9	259·4	265·5

*Figures relate to the year 1956.

N.A.—Not available.

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APPENDIX 'E'

Land utilisation statistics for Kerala for the year 1956-57

Serial No.	District		Total geographical area		Forests	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
			By professional survey	By village papers		Barren and uncul-turable land	Land put to non-agricultural use	Culturable waste	Permanent pastures and other grazing lands	Land under miscellaneous trees, crops and groves			
1	Trivandrum	..	5,41,632	5,33,983	1,01,703	31,057	29,245	6,772	..	1,880	5,704	8,119	3,48,503
2	Quilon ..	..	16,53,184	15,86,496	5,69,246	54,225	59,016	4,993	9,518	26,715	28,064	11,874	8,22,845
3	Kottayam ..	..	19,37,408	18,78,899	6,39,215	98,534	42,718	1,08,307	16,358	76,666	24,051	1,836	8,65,214
4	Trichur ..	..	11,39,840	10,91,455	3,15,224	37,548	60,600	14,570	14,258	7,927	15,712	7,904	6,17,712
5	Palghat ..	..	12,62,784	12,61,285	2,56,424	71,383	1,51,460	60,567	16,154	57,181	23,505	36,499	5,88,112
6	Kozhikode ..	..	16,34,814	16,34,814	3,91,361	1,05,724	62,225	1,11,240	8,598	1,29,408	42,738	30,659	7,52,861
7	Cannanore ..	..	14,24,960	14,24,960	1,85,250	98,835	97,800	1,30,749	55,703	2,08,595	13,960	1,04,253	5,29,815
	Total	..	95,94,622	94,11,892	24,58,423	4,97,306	5,03,064	4,37,198	1,20,589	5,08,372	1,54,734	2,07,144	45,25,062

N.B.—The above figures relate to seven districts only as the districts of Alleppy and Ernakulam came into being during 1958-59.

APPENDIX 'F'

Statement showing details of blocks offered for reclamation in Kerala

District		Name of block	Block No.	Nearest railway station	Accessible by fair/all weather road	Whether included in C.D. block	Area (Acres)	Amount of rainfall (inches)	Depth and nature of sub-soil water	Endemic disease
Kozhikode	..	Pannikode Amsom	1	Kozhikode	No road ..	Yes	3323	110	N.A.	No
Trichur	..	Periyaram ..	2	Chalakudy	All weather ..	Yes	500	130—135	40/sweet	No
Palghat	..	Pudur Amsom ..	3	Coimbatore	Fair weather ..	Yes	500	130—150	30/sweet	No
		Agali Amsom ..	4	Coimbatore	Fair weather ..	Yes	500	130—150	30/sweet	No
Ernakulam	..	Elankunnapuzha ..	5	Cochin Harbour Terminous.	All weather ..	Yes	500	120	10/sweet	Yes
Kottayam	..	Munnar Area ..	6	Marayoor, Mankolam and Kanthalloor.	No road ..	No	42604	75—150	N.A.	..
Trivandrum	..	Veli Kayal ..	7	Trivandrum	All weather ..	Yes	8000	70	20/sweet	No

N.A.—Not available.

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REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART VII—KERALA

WASTELANDS SURVEY AND RECLAMATION COMMITTEE

(MINISTRY OF FOOD AND AGRICULTURE)
GOVERNMENT OF INDIA

MARCH, 1961

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories—

(*a*) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis*, and

(*b*) lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June 1959 (Appendix A), with the following terms of reference—

(*i*) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(*ii*) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(*iii*) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives, and

(*iv*) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of Work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments

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and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, viz., Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia*, will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under—

(*i*) forests,
(*ii*) barren and unculturable lands,
(*iii*) land put to non-agricultural uses,
(*iv*) permanent pastures and meadows,

(*v*) areas under miscellaneous trees and crops,

(*vi*) culturable waste,

(*vii*) current fallows,

(*viii*) fallows other than current fallows, and

(*ix*) net area sown.

The lands classified under categories (*iv*), (*v*) and (*vi*) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2-5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head 'culturable waste' can serve but little purpose unless detailed information on the types of wasteland available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspect of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PREFACE

The report deals with the availability of wastelands in large-sized blocks in Kerala and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands in the State, we undertook a tour of the districts of Trichur, Ernakulam and Kottayam, and visited a few settlement projects undertaken by the State Government. We had discussions with the officials of the State Government on the 19th March, 1960, with regard to the availability of wastelands in the State and the problems connected with their reclamation and disposal. On the 30th November, 1960, the draft report of the Committee was discussed and finalised.

3. We wish to express our gratitude to Shri P. J. Francis, Secretary, Board of Revenue, Government of Kerala, who, in his capacity as Liaison Officer, furnished the necessary data required by the Committee. Our thanks are also due to Shri Sukumaran Nair, Joint Director of Agriculture, who accompanied us during our tour and was very helpful.

4. We are highly indebted to Dr. S. P. Raychoudhuri, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities at the cartographic laboratory of the Institute in printing the maps included in the Report.

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PART VII

KERALA

SECTION A

GENERAL ASPECTS

General aspects

The State of Madras consists of thirteen districts, *viz.*, Madras, Chingleput, South Arcot, North Arcot, Salem, Coimbatore, Tiruchirapalli, Tanjore, Madurai, Ramanathapuram, Tirunelveli, Kanya Kumari and the Nilgiris. The total geographical area of the State is 50,113 sq. miles.

2. The population of Madras, according to the 1951 census, is about 30 millions, which gives an average density of 600 persons per sq. mile, as compared to 287 for the country as a whole. Of the total population, 62.8 per cent is engaged in agricultural pursuits. The rural population is 75.6 per cent of the total population.

3. Based on its physical features, the State may be broadly divided into the following regions* :—

(i) Sub-tropical regions of the Nilgiris, the Palnis and the Shevaroys, and

(ii) Tropical region.

4. The sub-tropical region has a temperate climate. The important plantation crops of this region are tea, coffee, and rubber. Various other spice crops are found growing luxuriantly. The Nilgiris have an average elevation of 5,000 to 6,000 ft. the highest peak being 8,640 ft. above sea-level.

5. The tropical region may be sub-divided into four sub-regions as below:—

5.1. The delta areas of Tanjore, Tiruchirapalli and South Arcot districts, where paddy is extensively cultivated.

5.2. The sub-region to the north of the delta areas comprising North Arcot, Chingleput and the remaining part of South Arcot, which receives both the monsoons. Over 40 per cent of the cropped area is irrigated.

5.3. The region to the south of the deltas consisting of the districts of Ramanathapuram, Tirunelveli, Kanya Kumari and parts of Madurai and Tiruchirapalli. This area mainly receives the north-east monsoon, and 30 to 40 per cent of the cropped area is irrigated.

5.4. The rest of the plains area to the west of the deltas in Coimbatore, Salem and parts of North Arcot, Tiruchirapalli and Madurai districts. This region has a relatively low rainfall, and 20 to 30 per cent of the cropped area is irrigated.

6. The important rivers of the State are the Cauveri, the Vaigai and the Tambaraparni, which have their source in the Western Ghats. There are also the Palar and Ponnar which rise in the Mysore State. Besides, there are several streams and minor rivers of local importance.

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*Information based on "Farmers of India, Madras State".

Climate

7. The climate of the State is tropical and free from the extremes of temperature. The maximum temperature ranges from 95° to 110°F in the summer, while the minimum temperature in the cold season varies from 65° to 85° F. The State receives both the south-west and north-east monsoons, but most of the rainfall is derived from the north-east monsoon, except in the districts of North Arcot, Salem and the Nilgiris where the south-west monsoon is more vigorous. The coastal districts of Madras, Chingleput, South Arcot and Tanjore receive 30 to 40 inches of rain. In the inland districts of Madurai, Ramanathapuram, Tirunelveli, Kanya Kumari, North Arcot and Tiruchirapalli, the average rainfall is between 20 inches and 30 inches. The westernmost districts of Coimbatore and Salem receive between 20 and 25 inches of rain, while the rainfall in the Nilgiris is over 60 inches.

Soils

8. The soils of Madras may be classified into five major groups, *viz.*, red and lateritic soils, black soils, mixed red and black soils, alluvial soils, and forest and hill soils (*vide* Map I). A brief description of these soils is given below.

8.1. Red and lateritic soils are the predominant soil types of the State, and occur in one form or the other in all the districts. The red soils occupy the largest areas in the districts of Madurai and North Arcot, and are common in Chingleput, South Arcot, Salem, Coimbatore, Tiruchirapalli and Tirunelveli. The texture of red soils varies from sand to clay, loams being more common. The soil is red when the iron oxide occurs as an hydrous ferric oxide, but the colour is yellow when the oxide is in the hydrated form as limonite. Generally the top soil is red with the sub-surface soil yellow in colour. The pH of these soils ranges from 6.5 to 8.

8.2. Black soils are found in all the districts of the State, except the Nilgiris. They are most commonly met with in the districts of Ramanathapuram and South Arcot, where 61 per cent and 45 per cent, respectively, of the total cultivated area is composed of them. They are shallow and deep, the deep soils having a tendency to develop deep fissures during the summer. Free calcium carbonate is present in the form of *kankar,* and in some profiles, it may appear as a sort of *kankar* layer. These soils are less retentive of moisture and are more suited to irrigation than the Bombay Deccan black soils.

8.3. In many localities in the State red and black soils occur side by side. They are derived from the same parent rocks. While the red soils are in the uplands, the black soils occur in the low-lying lands. The difference in colour has been attributed to the difference in the degree of hydration of the iron present in the soil. However, the results of extensive investigations have shown that black soils do not always occupy lower situations as compared to red soils.

8.4. The deltas and coastal areas contain alluvial soils transported from the hills and uplands. The coastal soils are sandy and low in fertility. They are used for the cultivation of cocoanut, cashewnut and casuarina. The soils of the deltas are, however, heavy, and rich in plant nutrients. The major tract of river alluviums is in the Tanjore district, a large part of which is formed by the Cauvery delta. This alluvium is deficient in organic matter, nitrogen and phosphoric acid, but is rich in potash and lime. The pH ranges from 7 to 8.2.

8.5. The forest and hill soils are mostly found in the Nilgiris, and also in the eastern strip of the Kanyakumari district. These soils are under forests or grass. They are highly porous, and rich in organic matter, nitrogen and other nutrients. They vary from clay loam to sandy clay loam. Their pH ranges from 4.5 to 6.

9. The important crops grown in the different soil zones are as below:—

Soil Zone	*Crops*
Red and lateritic soils, Black soils, Mixed and black soils.	A large variety of crops are grown. The important crops are paddy, *cholam*, *cumbu*, *ragi*, *kulthi*, groundnut, gingelly, pulses, cotton, sugarcane, banana.
Alluvial soils (coastal and deltaic) ..	Paddy coconut, cashewnut, bananas, Punjab-American 216F cotton.

Irrigation

10. The total irrigated area in the State in the year 1957-58 was 7.4 million acres, out of the total cropped area of 16.7 million acres, representing about 44 per cent of the total cropped area. The main sources of irrigation in the State are canals and tanks, covering about 38 and 37 per cent, respectively, of the net irrigated area. Wells account for 23 per cent of the irrigated area, and other sources such as spring channels for about 2 per cent. The main crop under irrigation is rice, covering about 71 per cent of the total irrigated area.

Natural vegetation, crops grown and yields obtained

11. The State has a rich and varied flora. There are six distinct forest belts. These are the tropical, moist, deciduous forest belt in the western part of the Coimbatore and Tirunelveli districts; the dry deciduous forest belt; the thorn forest belt of scrub jungles; the tropical evergreen low forest belt on the east coast; the sub-tropical hill forest belt in the Nilgiris between the altitudes of 3,000 ft. and 5,000 ft., with a mixture of wet tropical and wet temperate forests, and the montane temperate forest belt above 5,000 ft. A number of valuable timber trees like teak, rosewood and white cedar are found in the deciduous forest belt. In the Nilgiris nutmeg, cocoa, clove, cinnamon and vanilla grow well.

12. The principal food crops grown in the State are rice, *cholam, cumbu, ragi* and pulses. Of the cash crops, the most important are groundnut, gingelly, sugarcane and cotton. Bananas, mangoes and vegetables are commonly grown.

13. Rice is the staple food crop of the State. Of the total cropped area of 17.6 million acres, rice occupied 5.6 million acres during 1957-58, representing about 32 per cent of the cropped area. It is grown in all the districts of the State, except the Nilgiris, mainly in the canal and tank irrigated areas. In many places two crops are raised in a year. The production of rice during the year 1957-58 is estimated at 3.2 million tons.

14. *Cholam* and *cumbu* are the other two important food crops in the State, which occupied an area of 1.7 and 1.2 million acres respectively. The total production of *cholam* during 1957-58 was 5.3 lakh tons, and of *cumbu* 2.7 lakh tons. The output of *ragi*, covering an area of 0.85 million acres, was 3.4 lakh tons.

15. Among the commercial crops, groundnut and cotton are the most important, covering an area of 1.9 and 1.0 million acres respectively. The production of groundnut was 9 lakh tons (unshelled), and of cotton 0.6 lakh tons in terms of lint. Sugarcane is an important wetland crop of the State, and the total production was 4 lakh tons in terms of gur. The output of cocoanut was estimated at 415 million nuts.

16. The average yields of important crops grown in the different districts are tabulated in Appendix D.

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SECTION B

DESCRIPTION OF BLOCKS AND MEASURES FOR RECLAMATION

14. According to the land utilisation statistics for the year 1958-59, the total area of the State may be classified as under:—

	Acres (million)
(*i*) Forests	4·39
(*ii*) Land not available for cultivation—	
(*a*) barren and unculturable land	2·47
(*b*) land put to non-agricultural use	3·10
(*iii*) Other uncultivated land excluding fallows—	
(*a*) Culturable waste	1·99
(*b*) permanent pastures and other grazing lands	0·94
(*c*) land under miscellaneous trees and groves	0·65
(*iv*) Current fallows	2·55
(*v*) Fallows other than current fallows	1·64
(*vi*) Net area sown	14·29
TOTAL	32·02

15. The above statement shows that the total area under the head "other uncultivated lands excluding fallows" is 3.58 million acres, and the area classified as "fallows other than current fallows" is 1.64 million acres. The district-wise distribution of the areas under each of the above heads is given in Appendix E.

16. Of the total area of 5.22 million acres under the heads "other uncultivated land excluding fallows" and "fallows other than current fallows", an area of 38,466 acres has been offered for reclamation in compact blocks of 250 acres or more. This area is relatively small as compared with the figures reported in the statement on land utilisation in para 14. It was explained to us that, although the total area reported in the revenue records under culturable waste was 2 million acres, a large proportion of it had been brought under cultivation by encroachment by landless labourers or cultivators. Further, in 1954, the State Government had issued instructions to the District Collectors to collect information on certain specified points in respect of blocks of wastelands measuring 50 acres and more in one taluk in each district. These surveys were subsequently extended to the remaining taluks in the districts, and the work was completed by the middle of 1957. On the basis of the information thus collected, the district Collectors were instructed by the State Government to arrange for the cultivation of compact blocks of wastelands located in the different districts. In these circumstances, it was felt that there was hardly any possibility of large-sized blocks of wastelands being available in the State, besides those blocks regarding which information had been furnished to the Committee, and the wastelands in the Attur taluk of the Salem district which, though allotted to landless labourers a few years ago, were now lying fallow owing to the inability of most of the allottees to cultivate them.

17. The wastelands offered for reclamation in the State can be broadly divided into the following three categories:—

I—Dry lands,
II—Saline lands, and
III—Lands infested with thick growth of bushes and jungle.

18. The distribution of wastelands in categories I to III in the various districts is given below:—

District	Area available in category (acres)			Total (acres)
	I	II	III	
Chingleput	259	—	—	259
North Arcot	3,643	—	—	3,643
South Arcot	3,330	—	—	3,330
Ramanathapuram	5,664	—	—	5,664
Coimbatore	400	—	—	400
Tirunelveli	3,550	—	—	3,550
Salem	5,528	—	—	5,528
Tiruchirapalli	5,892	—	—	5,892
Tanjore	—	8,000	—	8,000
Kanyakumari	—	—	2,200	2,200
	28,266	8,000	2,200	38,466

19. Map II shows the location of blocks of wastelands in categories I, II and III.

20. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

Category I

21. Thirty-nine blocks comprising a total area of 28,266 acres have been located for reclamation in this category as per details given below:—

District	Block No.	Area (acres)
Chingleput	1	259
North Arcot	2—6	3,643
South Arcot	7—13	3,330
Ramanathapuram	14—16	5,664
Coimbatore	17	400
Tirunelveli	18—19	3,500
Salem	20—24	5,528
Tiruchirapalli	25—39	5,892

22. *Block* 1 comprising 259 acres is situated in village Thammanur, in the Chingleput district. The land is uneven. The soil is alluvium, but is slightly gravelly and poor in organic matter. The area is devoid of vegetation. The rainfall is about 40 inches, and is mostly received in the months of October to December. No irrigation is available. The cost of reclamation involving levelling and construction of contour-bunds, will be about Rs. 100 per acre.

23. *Block* 2 measuring 2,000 acres is located in village Chengalnatham, in the Wallajah taluk of the North Arcot district. The land is slightly eroded, but terracing will render it fit for cultivation. The soil is red, and

has a depth of 2 to 2½ feet. The rainfall is 20—25 inches, most of which is received during September to December. No irrigation is available. The cost of reclamation is estimated at about Rs. 50 per acre.

24. *Blocks* 3 and 4 comprising 883 acres are located in the Chengam taluk of the North Arcot district. Part of the area is barren, and the rest is infested with shrubs and bushes. The soil is red and gravelly, and has a depth of about 2—5 feet. Terracing will be necessary to make the area suitable for cultivation. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 to Rs. 150 per acre.

25. *Block* 5 comprising 500 acres is located in village Aypedu, in the North Arcot district. The land is infested with weeds, shrubs and bushes, which will need to be cleared. It is also slightly eroded. The soil is red and has a depth of about 3 feet. The rainfall is about 40 inches. The cost of reclamation is estimated at about Rs. 50 per acre.

26. *Block* 6 measuring 260 acres is located in village Cholavaram, in the North Arcot district. The land is uneven and contour-bunding will be necessary. The soil is red and has a depth of about 1 to 1½ feet. The rainfall is about 38 inches, most of which is received during the period June to September. No irrigation is available. The cost of reclamation is estimated at Rs. 50 to Rs. 75 per acre.

27. *Block* 7 comprising an area of 280 acres is located in village Pullur, in the South Arcot district. The area is infested with shrubs and bushes. The land is gently sloping, and should be contour-bunded. The soil is red. The rainfall is about 38 inches, which is fairly well-distributed. The cost of reclamation is estimated at Rs. 50 to Rs. 100 per acre.

28. *Blocks* 8—13 comprising 3,050 acres are located in the Kallakurichi taluk of the South Arcot district. Other details are the same as for block 7.

29. *Block* 14 comprising 4,500 acres is located in the Karaikudi taluk of the Ramanathapuram district. Only a portion of the block is infested with weeds, shrubs and bushes, and can be cleared with the help of tractors. The land is gently sloping, and suitable soil conservation measures will be necessary. The soil is red and has a depth of 6 to 8 feet. The rainfall is about 30 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 to Rs. 100 per acre.

30. *Block* 15 measuring 270 acres is located in village Madukurani in the Sivaganga taluk of the Ramanathapuram district. The area is infested with weeds, shrubs and bushes. The soil is red loam and is barely 6 inches in depth. The land is gently sloping. The rainfall is about 25 inches, but it is variable. No irrigation is available. The land does not seem to be suitable for cultivation.

31. *Block* 16 comprising 894 acres is located in village Nettayarendal, in the Ramanathapuram district. The area is infested with shrubs and bushes in some places. The land is gently sloping, and suitable soil conservation measures will be necessary. The soil is red. The rainfall is about 34 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 100 per acre.

32. *Block* 17 comprising 400 acres is located in village Vadugapatty, in the Erode taluk of the Coimbatore district. The area is infested with

weeds and shrubs, and the land is slopy. The soil is red. The rainfall is about 20 inches. Irrigation can be provided for a period of about 4 months in alternate years from the Lower Bhawani project. Wells can be sunk for supplementing irrigation supply. The cost of reclamation is estimated at Rs. 200 per acre.

33. *Block* 18 consists of two sub-blocks measuring 250 acres and 300 acres located in villages Padmanabhamanglam and Srimoolakarai, in the Tirunelveli district. The area is infested with small shrubs and bushes. The land is steep, and is suitable for afforestation. The soil is red and gravelly. The rainfall is about 25 inches. No irrigation is available.

34. *Block* 19 measuring 3,000 acres is located between villages Kuttam and Muthumothanmozhi, in the Nanguneri taluk of the Tirunelveli district. The soil is red and gravelly, and is poor in organic matter. The rainfall is 20 to 25 inches, and it is also uncertain. The land is unsuitable for arable cultivation.

35. *Blocks* 20—24 comprising an area fo 5,528 acres are located in the Attur taluka of the Salem district, as per details given below:—

Village	Area (acres)
Appasamudram	1,092
Paithur	1,410
Ramanaickenpalayam	1,640
Siruvachur-Thalaivasal	1,002
Mangini	384

35.1. The soil of the blocks in villages Ramanaickenpalayam and Appasamudram is loamy, and varies in colour from light red to black with a depth of 1 to 4 feet. The soil of the block in village Paithur is mostly red loam with black loam found in some places, while in village Mangini it is red loam and gravelly mixed with pebbles here and there. The land is uneven. In village Siruvachur, the soil is red loam and is devoid of vegetation, except for some patches of grass. Most of the land is fairly even. The rainfall is about 40 inches, and is fairly well distributed. It is derived from both the south-west and north-east monsoons, and about 5 inches of it is received in the hot weather. The water-table in all the blocks is fairly high, and open wells can be sunk at a depth of 20 to 30 feet. In the lands adjoining the hills, there are a number of streams which flow up to the end of February. The reclamation of these lands involves the clearance of bushes and shrubs, and will cost about Rs. 100 per acre.

35.2. It appears that the wastelands in the Attur taluka have good potentialities for agricultural production. Owing to the erratic nature of the monsoon, supplemental irrigation from wells is necessary for successful cultivation. The hill slopes should be used for farm forestry, and the lands at the foot of the hills reserved for pastures. The selection of the right type of settler will be essential to ensure the success of the settlement schemes.

35.3. We were further informed that, of the total area of 52,000 acres of wastelands reported in the revenue records to be available in the Attur taluk, over 33,000 acres have already been allotted for individual cultivation. A greater part of the latter area had not, however, been brought under cultivation due mainly to lack of irrigation facilities and the selection of settlers who did not have sufficient resources for reclaiming the lands and for follow-on operations. In the circumstances, it appears that large areas of wastelands are still available in the Attur taluk, and we would accordingly suggest that a rapid survey should be conducted to locate these areas so that they could be taken up for cultivation.

36. *Blocks* 25—39 : Block 25—28 measuring 1,058 acres are located in the Musiri tehsil, of the Tiruchirapalli district, and the other blocks comprising 4,834 acres are in the Lalgadi tehsil of the same district. The blocks are infested with weeds and shrubs. In blocks 25 to 28, the land is gently sloping, while it is mostly undulating in blocks 29—39. The soil in blocks 25 and 26 is black loam, and it is mostly red in other blocks, with patches of black soil found here and there. The soil depth is barely 9 inches. The rainfall in the Musiri tehsil is 27 inches, and it is much less in the Lalgudi tehsil. The areas offered for reclamation are practically devoid of trees and shrubs and can be brought under cultivation by adopting suitable soil and water conservation measures. The uplands are more suited for afforestation, and should be planted to cashewnut, casuarina and other trees of economic importance. The cost of reclamation is estimated at Rs. 150—200 per acre.

Category II

37. Only one block comprising a total area of 8,000 acres has been located in this category as per details below.

38. *Block* 40 comprising 8,000 acres of swampy land is located in the Pattukottai taluk of the Tanjore district. The lands are highly saline due to inundation by seawater over a number of years. The area is swampy and only scrub jungles are found. According to the survey carried out by the State Government, the salinity is so high that the lands will not support the growth of trees of any economic importance. Further, the drainage of the stagnant water from the swampy land would present a very serious problem, and the expenditure involved on drainage and the removal of salinity from the land may not be commensurate with the returns after reclamation. Accordingly, the area is not recommended for reclamation.

Category III

38. Two blocks comprising an area of 2,200 acres infested with thick jungle growth have been located under this category.

39. *Block* 41 comprising 1,200 acres is located in village Thadikarankonam, in the Kanyakumari district. The area is infested with thick jungle growth. A portion of the area is heavily eroded with deep gullies. The soil is alluvium. The rainfall is about 80—100 inches. Perennial irrigation can be provided from the nearby hill streams. In view of the heavy rainfall, the block is suitable for growing crops like tea, rubber, pepper, etc. The cost of reclamation is estimated at Rs. 200—300 per acre.

40. *Block* 42 comprising 1,000 acres is located in village Muttam along the coast, in the Kanyakumari district. The area is badly eroded with deep gullies. The soil is red. The rainfall is about 40 inches. No irrigation is available at present. The land is mostly suited for growing crops like cashewnut, cocoanut, etc. The cost of reclamation is estimated at Rs. 500 per acre.

SECTION C

DISPOSAL OF RECLAIMED LANDS FOR CULTIVATION

Nature of ownership of wastelands and their disposal for cultivation

41. In this Section, we may deal with the various measures needed for the disposal and development of wastelands which have been located in the State. These measures would primarily depend upon the nature of ownership of wastelands. A statement showing the break-down of wastelands according to their ownership in respect of categories I, II and III is given in Appendix G. It would be observed from the statement that most of the lands in the three categories belong to the Government, while only a small percentage of these lands is privately-owned. A small area belongs to the village panchayats. The problems involved in the disposal of wastelands in each category of ownership are discussed below.

41.1. *Private lands*: The lands belonging to private individuals are mostly located in the South Arcot and North Arcot districts. These lands, after reclamation, may be handed over to their respective owners for follow-on cultivation. The cost of reclamation of these dry lands is not likely to be high and there may not be any difficulty in recovering the reclamation charges. We recommend that 25 per cent of the expenditure on contour-bunding of the dry lands may be treated as subsidy to be shared equally between the Centre and the State Government, and the balance advanced as loan to the cultivators to be recovered from them in equal annual instalments spread over a period of 10—15 years.

41.2. *Government lands* : As stated earlier, the bulk of the wastelands in blocks of 250 acres or more belongs to the Government. In order to bring these lands under cultivation, we suggest that co-operative colonies of landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., may be set up, or that these lands may be allotted to landless labourers, etc. in accordance with the existing orders of the State Board of Revenue. We were informed by the State officials that the most suitable method of disposal of Government wastelands in the different districts, particularly in Salem and Tiruchirapalli, was to arrange for their cultivation on a co-operative basis, since the settlers have meagre resources for bringing these lands under cultivation. As the expenditure on the setting up of co-operative colonies of settlers is usually heavy, we suggest that it may be partly met from the provision made for settlement schemes by the Ministry of Food and Agriculture, and partly from the amount earmarked for the welfare of the Scheduled and Backward Classes by the Ministry of Home Affairs. A model settlement scheme is given in Appendix H.

Suggestions for effective utilisation of wastelands

43. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, so that the lands are put to proper use. The State Government may apply for financial assistance to the Central Soil Conservation Board for conducting these surveys.

44. After reclamation measures have been carried out, the responsibility for follow-on cultivation should be that of the normal staff of the Agriculture Department. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the

reclaimed areas. The extension staff of the Community Developmnt Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

45. In the Attur taluk of the Salem district where about 5,500 acres have been located in blocks of 250 acres or more, and where more areas of wastelands are reported to be available (*vide* para 35.3), the rainfall is about 40 inches, but it is not well-distributed. The water-table in all the blocks is fairly high, and open wells can be sunk at a depth of 20—30 feet. In the lands adjoining the hills, there are a number of streams which flow up to the end of February. In view of these considerations, irrigation from wells is feasible and is necessary to ensure good crops. Similarly, in the district of Tiruchirapalli, facilities for irrigation will have to be provided for successful cultivation of the reclaimed lands. Accordingly, we recommend that loans may be given on a liberal scale to the cultivators for sinking wells.

46. Some of the areas in the Salem and Tiruchirapalli districts are rocky, and it will be difficult to dig wells without the help of equipments like drills, blasting units, etc. It was reported to us that these equipments were not available in sufficient quantities in the State. As the lands in these two districts have great potentialities for agricultural production, we recommend that assistance may be given for the import of the necessary equipment for boring wells.

47. Before the wastelands are allotted to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., these lands should be reclaimed.

48. In any settlement project, the selection of suitable settlers is a vital factor contributing to its success. Accordingly, special attention should be given to this important aspect of settlement work so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work are selected.

49. In order that the settlement work is successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. Experience has shown that where the District Collectors and the Block Development Officers take personal interest in the settlement work, the projects are often successful.

50. We had an opportunity of visiting some of the settlement projects undertaken by Shri G. M. Badsha, District Collector, Tiruchirapalli, during the Second Plan period. We were much impressed by the progress made by these projects, the co-operative spirit shown by the settlers, and the interest which the officers of the Revenue Department were taking in their execution. In view of the availability of large areas of wastelands in the Salem and Tiruchirapalli districts and the satisfactory progress made in settling landless labourers on these lands, we recommend that suitable provision should be made in the Third Five Year Plan for executing settlement projects in these districts.

51. The general crop patterns for the lands in the different categories are as under :—

51.1. *Category I:* The blocks selected for reclamation in this category are situated in the districts of Chingleput, North Arcot, South Arcot, Ramanathapuram, Coimbatore, Tirunelveli, Salem and Tiruchirapalli. In areas which entirely depend upon rainfall, a dry farming system of cultivation is practised. Suitable crop rotations are in vogue on dry lands, but in some areas the same crops are grown year after year in the same fields. The principal crops are *cholam* (Jowar), *cumbu* (bajra), *ragi*, pulses, gingelly, groundnut and cotton. Mixtures of *cholam* with pulses or gingelly are common. Like *cholam, cumbu* is grown both as a pure crop and as a mixture. In light sandy loams groundnut is cultivated as a rainfed crop. It is grown as a pure crop or mixed with cotton or *cholam*.

51.1.1. Wherever irrigation from wells is available, garden-land cultivation is practised. A variety of crops are grown. *Ragi, cholam* and gingelly are also grown as irrigated crops. Sugarcane is cultivated in rotation with garden-land crops.

51.2. *Category II* : The saline lands in category II are located in the Tanjore district. These are swampy lands, and are not suitable for cultivation due to their high salt content. Paddy can be cultivated in such lands if they are reclaimed.

51.3. *Category III* : The lands in category III are situated in an area of heavy rainfall, and are suitable for growing rubber, tea, pepper, etc. Some of the lands along the coast where the rainfall is not heavy, seem to be suitable for growing crops like cocoanut, cashewnut, etc.

Economic aspects of reclamation

52. We may now examine the economic aspects of reclamation of wastelands included in categories I and III. As stated earlier, the lands in category II are not suitable for cultivation. The two main factors influencing the economics of reclamation are the cost of reclaiming wastelands and the anticipated benefits on account of reclamation in terms of additional agricultural production. In the conditions obtaining in the Madras State, the utilisation of wastelands in some of the districts, particularly in Salem and Tiruchirapalli, involves the establishment of settlement colonies for arranging their cultivation. In determining the economic aspects of a reclamation project, the cost of settlement which is usually heavy, should ordinarily be taken into account. However, we consider that the settlement of landless labourers and the members of the Scheduled Castes and the Scheduled Tribes is a social problem, and the expenditure on this account should accordingly be treated separately from the actual cost of reclamation.

53. As stated in Section B, most of the wastelands in category I are found in the districts of North Arcot, South Arcot, Ramanathapuram, Tirunelveli, Salem and Tiruchirapalli. Of the total area of 28,266 acres which has been located for reclamation, 3,820 acres (270 acres in the Ramanathapuram and 3,550 acres in the Tirunelveli districts) are not suitable for cultivation. These lands are badly eroded, and the expenditure on their reclamation will not be commensurate with the anticipated returns from such lands. As regards the areas located in the Ramanathapuram, North Arcot and South Arcot districts, they are low in fertility and there are also no facilities for irrigation. These lands at present grow only seasonal crops, the yields of which will not exceed 5-6 mds. per acre. The lands in the Salem district, however, are fertile, and with the provision of adequate irrigation facilities, double cropping can be practised on these lands. On a conservative estimate, the additional production of foodgrains from these lands may be assumed as 15 mds. per acre. In the wastelands of the Tiruchirapalli district, the uplands which cannot be reclaimed, may be put

under crops like cashewnut on a plantation scale. The cultivation of cashewnut gives good returns from the 6th year after planting. In the lands where millets can be grown, the average yield in terms of foodgrains may be taken as 8 mds. per acre.

54. To sum up, the wastelands in category I which cannot be reclaimed for growing food crops, can be put under cashewnut and other trees of economic importance. The net return from an acre of land under non-food crops is about Rs. 200 per acre. In the lands where food crops can be grown, the average yield of foodgrains is estimated at 5-6 maunds in the districts of Ramanathapuram, Chingelput, Coimbatore, South Arcot and North Arcot, 15 maunds in Salem, and 8 maunds in Tiruchirapalli.

55. In category III, there are only two blocks of wastelands, *viz.*, blocks 41 and 42. As stated earlier, block 41 is suitable for growing crops like pepper, tea, rubber, etc., which are quite remunerative. The lands in block 42, are fit for growing cashewnut and cocoanut, but the cost of reclamation is heavy.

56. To assess the relative economic benefits of reclamation in the different areas, the figures of estimated additional food production should be studied in relation to the costs of reclamation and other relevant factors. Table I gives the area proposed for reclamation, the cost of reclamation, the additional food production and the cost of reclamation per maund of additional production.

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TABLE I

Cost of reclamation of land in categories I and III and estimated additional production

Category	Description	Block No.	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation (Rs.)	Additional production per acre (maunds)	Total additional production (maunds)	Value of total additional production (Rs.)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I	Dry lands	1, 2-6, 7-13, 14, 16 and 17	13,026	88	11,46,675	5	65,130	6,51,300	50	17·6
		20-24	5,528	100	5,52,800	15	82,920	8,29,200	150	6·7
		25-39	5,892	175	10,13,100	8	47,136	4,71,360	80	21·9
III	Lands infested with thick growth of Jungle	41	1,200	250	3,00,000					
	TOTAL ..		25,646		30,30,575		1,95,186	19,51,860		

NOTE.—(1) The main food crops in the areas included in category I are millets, gingelly, groundnut and pulses. A common price of Rs. 10 per maund is assumed.

(2) The main crops in block 41 (category III) are rubber, pepper etc., which are remunerative.

(3) The above table excludes 3,820 acres of wastelands in category I which are not suitable for cultivation, and 1,000 acres of wastelands n category III, the cost of reclamation of which is high.

57. It would be seen from the table that the cost of reclaiming 24,446 acres in category I (excluding 3,820 acres which are not suitable for cultivation) comes to about Rs. 27.30 lakhs, *i.e.*, about Rs. 112 per acre. The estimated additional production from the reclaimed lands is 1,95,186 maunds of foodgrains, valued at Rs. 19.51 lakhs. Thus, the value of production will cover the cost of reclamation in about two seasons.

58. The cost of reclaiming 1,200 acres in category III (excluding 1,000 acres, the cost of reclamation of which is high) is estimated at Rs. 30.00 lakhs, *i.e.*, Rs. 250 per acre. Considering that these lands are suitable for growing crops like pepper, tea, rubber, etc., which are remunerative, their reclamation will be economical.

59. As regards the economics of reclamation of the different blocks of wastelands, the lands in the Salem district (blocks 20—24) would appear to be the most profitable in terms of the additional food production per acre, followed by blocks 25—39 located in the Tiruchirapalli district. In the latter district, the cost of reclamation of land is high, but we recommend that these lands may also be assigned a high priority as settlement projects carried out in similar types of lands in this district have proved successful and the experience gained will be useful in extending the operations to these areas. In blocks I, 2—6, 7—13, 14, 16 and 17, the cost of land improvement is not high, and by the adoption of a suitable system of dry farming, the risk of crop failures can be reduced and crop yields improved considerably. The area included in category III (block 41) is small, but the lands are capable of producing good commercial crops like rubber, pepper, tea, etc., which are highly remunerative.

60. In view of what has been stated above, we recommend that the following order of priority may be assigned to the different areas:

District	Block No.	Priority
Salem and Kanyakumari	20—24, 41	I
Tiruchirapalli	25—39	II
Chingleput, North Arcot, South Arcot, Ramanathapuram and Coimbatore.	1, 2-6, 7-13 ,14, 16 and 17	III

SECTION D

SUMMARY OF GENERAL CONCLUSIONS AND RECOMMENDATIONS

Of the total area of 5.22 million acres under the heads 'other uncultivated land excluding fallows' and 'fallows other than current fallows', about 38,000 acres have been located in the State for reclamation. This area is relatively very small as compared with the figures reported in the revenue records. It was explained, however, that the revenue figures could not be relied upon and that large areas of wastelands had already been allotted for cultivation to the members of the Scheduled Castes and the Scheduled Tribes, etc.

(Paragraph 16)

2. The wastelands offered for reclamation in the State may be broadly divided into the following three categories:—

I—Dry lands,
II—Saline lands, and
III—Lands infested with thick growth of bushes and jungle.

(Paragraph 17)

3. The distribution of wastelands in categories I to III is given below:—

Category	*Area* (acres)
I	28,266
II	8,000
III	2,200
TOTAL	38,466

(Paragraph 18)

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4. Most of the wastelands in category I are found in the districts of North Arcot, South Arcot, Ramanathapuram, Salem and Tiruchirapalli. The entire area located in the Tirunelveli district and a part of the area in the Ramanathapuram district are not suitable for cultivation. The wastelands in the North Arcot, South Arcot and Ramanathapuram districts are low in fertility and can grow only seasonal crops. The lands in the Salem district are, however, fertile, and, with the provision of irrigation facilities, double cropping can be practised on these lands. In the Tiruchirapalli district, the uplands may be put under crops like cashewnut on a plantation scale. The other wastelands may be utilised for growing millets.

(Paragraphs 21-36)

5. It appears that, of the 33,000 acres allotted for individual cultivation in the Attur taluk of the Salem district, a large part of this area has not been brought under cultivation due mainly to lack of irrigation facilities and the selection of settlers who did not have sufficient resources for reclaiming the lands and for follow-on cultivation operations. In the circumstances, large areas of wastelands are still available in the Attur taluk. A

rapid survey should be conducted to locate these areas so that they could be taken up for cultivation.

(Paragraph 35.3)

6. The saline lands in category II are located in the Tanjore district. These are swampy lands, and are not suitable for cultivation due to their high salt content.

(Paragraph 38)

7. The lands in category III are situated in an area of heavy rainfall, and are suitable for growing rubber, tea, pepper, etc. Some of the lands along the coast where rainfall is not heavy, seem to be suitable for growing crops like cashewnut, cocoanut, etc.

(Paragraphs 39-40)

8. Most of the wastelands located for reclamation belong to the Government, and only a small area is privately-owned. The lands belonging to private individuals may, after reclamation, be handed over to their respective owners for their follow-on cultivation. The cost of reclamation of these dry lands is not likely to be high. The expenditure on contour-bunding of the dry lands may be shared between the Government and the cultivator on the basis of the existing pattern of financial assistance whereby 25 per cent of the expenditure is treated as subsidy to the cultivator and 75 per cent is advanced as loan to be recovered over a period of 10—15 years.

(Paragraph 41)

9. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, so that the lands are put to proper use. The State Government may apply for financial assistance to the Central Soil Conservation Board for conducting these surveys.

(Paragraph 43)

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10. After reclamation measures have been carried out, the responsibility for follow-on cultivation should be that of the normal staff of the Agriculture Department. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

(Paragraph 44)

11. In the Attur taluk of the Salem district where about 5,500 acres have been located in blocks of 250 acres or more, and where more areas of wastelands are reported to be available (*vide* para. 35.3), the rainfall is about 40 inches, but it is not well-distributed. However, the water-table in all the blocks is fairly high, and open wells can be sunk at a depth of 20—30 feet. Also, in the lands adjoining the hills, there are a number of streams which flow up to the end of February. There are thus adequate facilities for providing irrigation which seems to be necessary to ensure good crops. Similarly, in the district of Tiruchirapalli, facilities for irrigation will have to be provided for successful cultivation of the reclaimed lands.

Accordingly, it is suggested that loans may be given on a liberal scale to the cultivators for sinking wells.

(Paragraph 45)

12. Some of the areas in the Salem and Tiruchirapalli districts are rocky, and it will be difficult to dig wells without the help of equipments like drills, blasting units, etc. It was reported that these equipments were not available in sufficient quantities in the State. As the lands in these two districts have great potentialities for agricultural production, suitable assistance may be given for the import of the necessary equipments for boring wells.

(Paragraph 46)

13. Before the wastelands are allotted to landless labourers, the members of the Scheduled Castes and the Scheduled Tribes, etc., these lands should be reclaimed.

(Paragraph 47)

14. In any settlement project, the selection of suitable settlers is a vital factor contributing to its success. Special attention should be given to this important aspect of settlement work so that the right type of settlers who have an aptitude for agricultural work and who are willing to do hard work are selected.

(Paragraph 48)

15. In order that the settlement work is successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. Experience has shown that where the District Collectors and the Block Development Officers take personal interest in the settlement work, the projects are often successful.

16. In view of the availability of large areas of wastelands in the Salem and Tiruchirapalli districts, and the satisfactory progress made in settling landless labourers on these lands, suitable provision should be made under the Third Five Year Plan for executing settlement projects in these districts.

(Paragraph 50)

17. The cost of reclaiming 24,446 acres in category I (excluding 3,820 acres which are not suitable for cultivation) comes to Rs. 27.30 lakhs, *i.e.*, about Rs. 112 per acre. The estimated additional production from the reclaimed lands is 1,95,186 maunds of foodgrains, valued at Rs. 19.51 lakhs. Thus, the value of production will cover the cost of reclamation in about two seasons.

(Paragraph 57)

18. The cost of reclaiming 1,200 acres in category III (excluding 1,000 acres, the cost of reclamation of which is high) is estimated at Rs. 30.00 lakhs, *i.e.*, Rs. 250 per acre. Considering that these lands are suitable for growing crops like pepper, tea, rubber, etc., which are remunerative, their reclamation will be economical.

(Paragraph 58)

19. A study of the economics of reclamation of the different blocks of wastelands in category I reveals that the lands in the Salem district are the most profitable in terms of additional food production, followed by

blocks located in the Tiruchirapalli district. In other blocks, the cost of reclamation is not high, and by the adoption of a suitable system of dry farming, the risk of crop failures can be reduced and normal crop yields obtained.

(Paragraph 59)

20. The following order of priority is assigned to the different areas:—

District	Block No.	Priority
Salem and Kanyakumari	20—24 & 41	I
Tiruchirapalli	25—39	II
Chingleput, North Arcot, South Arcot, Ramanathapuram & Coimbatore.	1, 2—6, 7—13, 16 and 17	III

(Paragraph 60)

(Sd.)
(B. N. Uppal)
Chairman

Members

1. (Sd.) J. P. Mital
2. (Sd.) F. C. Gera
3. (Sd.) M. S. V. Rama Rao

Co-opted-Members

1. (Sd.) Kavthikeyan
   D. A., Madras
2. (Sd.) D. Ambrose
   Supdt. Eng. P.W.D.
3. Sd.) K. R. Venkatesan
   District Forest Officer
   Special Division for Reconnaissance of Eroded Lands, Madras-14.
4. (Sd.) S. Satyabhama
   Dy. Secretary, Revenue Deptt.
5. (Sd.) T. R. Ramakrishnan
   Asst. Secy. to Government, Food & Agriculture Deptt.

(Sd.) A. S. VENU GOPALAN
Secretary

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APPENDICES

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APPENDIX 'A'

K. R. DAMLE, I.C.S.,
Secretary

No. F. 1024/SPL/59

GOVERNMENT OF INDIA

MINISTRY OF FOOD & AGRICULTURE

(DEPARTMENT OF AGRICULTURE)

New Delhi, June 11, 1959.

MY DEAR,

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories:

(a) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis;* and

(b) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee:—

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. The Committee will consist of the following:—

1.	Dr. B. N. Uppal, Agricultural Commissioner, Government of India	*Chairman*
2.	*Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India	*Member*
3.	Shri F. C. Gera, Chairman, Central Tractor Organisation	*Member*
4.	Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	*Member*

In addition, the Committee will co-opt in individual States the following officers:—

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior Officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing waste lands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full co-operation and provide the necessary facilities for the work of this Committee.

Yours sincerely,
(Sd.) K. R. DAMLE

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation Government, of India, was appointed a Member from the 3rd February, 1960 *vide* Memo. No. 12-1/59-GMF (Co), dated the 3rd February, 1960 (copy on p. 25).

No. F. 12-1/59-GMF(CO)

GOVERNMENT OF INDIA

MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)

New Delhi the 3rd February, 1960.

SUBJECT :—*Reclamation of culturable wastelands in the country—Setting up of a Committee.*

Reference this Ministry's Express letter of even number, dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F. 1024/SPL/59, dated the 11th June, 1959, referred to therein:—

> "Shri M. S. V. Rama Rao,
> Senior Director of Soil Conservation,
> Government of India,
> in place of Dr. J. K. Basu since retired."

(Sd.) V. BALASUBRAMANIAN,
Under Secretary.

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APPENDIX 'B'

Questionnaire issued by the Wastelands Survey and Reclamation Committee.

1. What is the total area of culturable wasteland in your State?

(Culturable waste land is defined as under:—

All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?
3. What is the extent of land under miscellaneous trees and groves?
4. What is the extent of fallow lands other than current fallows?

(Current fallows are defined as those lands which remain fallow for the current year only.

Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :
DISTRICT :

Details in respect of Block No. .... *consisting of* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land).

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located).
2. Is the area included in any Community Development Block? If so, please give the name of the block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately-owned, in order to carry out the colonization operations in the block successfully?

12. If so, what would be the likely cost of acquisition?
13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted?
14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.
15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors? If the former, is adequate labour locally available?
16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.
17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block?
18. What is the type of soil in the block? (alluviums, black, red or lateritic).
19. Is the land flat or gently sloping or steep? What is the depth of the soil?
20. What crops are grown in the area round about the block ?
21. What is the yield per acre of each crop?
22. What is the nearest marketing centre for these crops?
23. What is the extent and distribution of rainfall in the area?
24. Can irrigation facilities be made available for the block? If so, what kind of facilities?
25. Whether these irrigation facilities will be perennial or non-perennial?

26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Five Year Plan will cover this land ?
27. What is the depth of sub-soil water? Is water sweet or brackish?
28. Are anti-malarial operations necessary in the area for successful colonization?
29. Is any endemic disease prevalent in the area? If so, do the State Government contemplate any measures to combat this disease?
30. Is drinking water available in the block?
31. Are there any drinking water wells in use?
32. Is the area subject to depredations of wild animals? If so, what animals?
33. Is the Block likely to attract settlers from distant places in the State or from other States?
34. If the block is not likely to attract settlers from distant places in the State or from other States, what kind of settlers would you recommend for colonization of the block?
35. Do you think educated unemployed could be successfully settled in the block?
36. What should be the unit of allotment per settler?
37. Would you suggest that the settlers should put up their homesteads on allotted lands, or would you like to set up *abadis* for them? If the latter, what should be the unit of allotment for residential purposes in the village *abadi ?*
38. Would it be necessary to organise any training for the settlers, before they are allotted land? (the settlement will be on co-operative basis).
39. Any other details which you may like to give in the light of the terms of reference.

APPENDIX 'C'

DR. B. N. UPPAL,
Chairman, Wastelands Survey and
Reclamation Committee.

D.O. No. F/59-WLS & RC

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(DEPARTMENT OF AGRICULTURE)
KRISHI BHAVAN, NEW DELHI.

January 2, 1960
Paus 12, 1881.

DEAR SHRI,

Kindly refer to my letter of even number, dated the 10th August, 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in Appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States along with our letter of even number, dated

the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,
(Sd.) B. N. UPPAL

All Liaison Officers
in the States and Union Territories.

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APPENDIX 'D'

Statement showing yield (in lbs.) per acre of principal crops in Madras during 1957-58 *(District-wise)*

District/Crop	Rice	Jowar	Bajra	Ragi	Kora	Vargu	Samai	Gram	Sugar-cane	Ground-nut	Chillies	Tobacco (cured leaf)	Cotton
Chingleput	958	547	450	770	784	752	490	192	58,240	1,008	900	—	147
South Arcot	1,301	375	400	981	970	1,248	485	196	60,480	1,098	1,459	960	127
North Arcot	1,325	680	420	1,084	855	950	470	186	58,240	1,086	855	1,316	169
Salem	1,561	800	500	725	651	564	360	190	51,520	1,030	1,530	789	155
Coimbatore	1,805	650	475	1,030	686	588	368	196	76,260	1,064	1,642	1,425	188
Tiruchirapalli ..	1,256	700	525	750	670	950	490	196	56,100	1,008	1,380	1,178	145
Tanjore	1,242	1,078	530	1,000	686	950	475	196	56,100	1,109	665	990	133
Madurai	1,541	725	700	1,155	576	882	490	196	62,920	1,053	1,350	1,104	114
Ramanathapuram ..	933	750	600	900	576	810	490	194	45,000	1,064	836	1,127	90
Tirunelveli	1,507	900	500	1,130	485	846	388	200	58,240	1,098	900	1,045	98
The Nilgiris	1,150	542	500	600	—	—	594	192	—	1,098	1,800	—	—
Kanya Kumari	1,743	500	—	—	—	—	—	192	56,200	1,030	1,000	—	92
STATE	1,294	697	509	887	637	922	440	194	60,680	1,064	1,139	1,269	133

APPENDIX 'E'

Land utilisation statistics for Madras for the year 1958-59 (*District-wise*)

District		Total geographical area		Forests	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
		By professional survey	By village papers		Barren & unculturable land	Land put to non-agricultural uses	Culturable waste	Permanent pastures and other grazing lands	Lands under miscellaneous tree crops & groves			
Madras ..	..	31,283	32,890	—	—	32,890	—	—	—	—	—	—
Chingleput ..	..	1,961,721	1,958,852	120,834	165,264	393,114	131,352	102,682	102,292	144,321	146,703	652,290
South Arcot ..	..	2,690,496	2,693,158	158,583	398,324	233,205	144,390	29,113	111,311	143,392	134,101	1,340,739
North Arcot		2,991,098	2,978,241	775,102	182,876	322,725	139,207	52,814	32,762	143,876	114,462	1,214,407
Salem ..	..	4,520,442	4,512,923	928,852	493,110	240,082	242,249	127,603	86,307	262,136	206,926	1,925,658
Coimbatore	..	3,851,821	3,863,688	971,442	106,252	148,762	123,094	52,737	15,914	448,032	132,090	1,865,365
Tiruchirapalli	..	3,529,165	3,523,305	169,220	172,363	500,205	365,554	129,595	50,007	254,984	170,559	1,710,818
Tanjore ..	..	2,393,344	2,392,602	30,862	100,858	458,237	100,128	15,082	67,941	91,750	96,826	1,430,918
Madurai ..	..	3,142,528	3,116,045	394,145	223,734	246,173	86,959	294,425	76,424	254,795	155,216	1,384,174
Ramanathapuram	..	3,103,488	3,088,194	62,743	407,126	284,969	302,881	43,255	50,735	478,378	108,628	1,349,479
Tirunelveli ..	..	2,828,243	2,821,006	314,739	141,737	198,214	276,124	72,195	30,985	305,504	356,487	1,125,021
The Nilgiris ..	..	629,568	628,970	341,952	21,876	19,332	69,181	19,430	10,495	17,484	12,990	116,230
Kanya Kumari	..	411,520	412,240	122,834	53,805	25,658	6,300	3,000	15,493	3,203	4,212	177,735
STATE	..	32,084,717	32,022,114	4,391,308	2,467,325	3,103,576	1,987,419	941,931	650,666	2,547,855	1,639,200	14,292,834

APPENDIX 'F'

Details of blocks in the different categories offered for reclamation in Madras

District	Name of block	Block No.	Nearest Rly. Station	Whether accessible by all/fair weather road	Whether included in C.D. Block	Total area (acres)	Amount of rainfall (inches)	Depth (feet) & nature of sub-soil water	Endemic diseases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				Category I					
Chingleput	Thammanur	1	Walajabad	All weather	Yes	259	42	30—35, sweet	No
North Arcot	Chengalnatham	2	Mukum darayapuram	All weather	Yes	2,000	30—35	7-8, slightly brackish.	No
	Naradapettu	3	Tiruvannamalai	All weather	Yes	513	28	20—30, sweet	No
	Paramanandal	4	Tiruvannamalai	All weather	Yes	370	28	30—40, sweet	No
	Kavaripakkam	5	Sholinghur	Fair weather	Yes	500	42	15—25, brackish	No
	Cholavaram	6	Conjeevaram	All weather	Yes	260	38	18, sweet	No
South Arcot	Pullur	7	Kothakudi	All weather	Yes	280	35—40	N.A.	No
	Indali	8	Chinnasalem	All weather	Yes	492	35—40	N.A.	No
	Bangaram	9	Chinnasalem	All weather	Yes	297	35—40	N.A.	No
	Rayarpalayam	10	Chinnasalem	All weather	Yes	289	35—40	N.A.	No
	Veerabayankaram, Koral, Kugaiyur.	11	Chinnasalem	All weather	Yes	475	35—40	N.A.	No
	Elavado Pandiyankuppam	12	Chinnasalem	All weather	Yes	749	35—40	N.A.	No
	Maravainatham Thenchettiyandal	13	Chinnasalem	All weather	Yes	748	35—40	N.A.	No
Ramanathapuram	Karaikudi	14	Karaikudi	Fair weather	Yes	4,500	30	30, sweet	No
	Mattukurani	15	Nattarasankothai	All weather	Yes	270	25—30	6, brackish	No
	Nattayarendal	16	Karaikudi	All weather	Yes	894	34	15—20, sweet	No
Coimbatore	Vadugapatty	17	Erode	All weather	Yes	400	20—25	20, sweet	No
Tirunelveli	Srimoolakarai Padmanabhamangalam	18	Srivaikuntam	Fair weather	Yes	550	25	N.A.	No
	Kuttam, Muthumothanmozhi	19	Tirunelveli	All weather	Yes	3,000	25	40, brackish	No
Salem	Appasamudram	20	Attur	Fair weather	Yes	1,092	40	20—25, sweet	No
	Paithur	21	Attur	Fair weather	Yes	1,410	40	20—25, sweet	No
	Ramanaickenpalayam	22	Attur	Fair weather	Yes	1,640	40	20—25, sweet	No
	Siruvachur	23	Thalaivasal	Fair weather	Yes	1,002	40	20—25, sweet	No
	Mangini	24	Attur	Fair weather	Yes	384	40	20—25, sweet	No

APPENDIX *'F'*—(contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Tiruchirapally	Sherpudi	25	Kulitalai	Fair weather	Yes	297	27	25—30, sweet	No
	Devanur	26	Kulitalai	Fair weather	Yes	250	27	25—30, sweet	No
	Venkalachalapuram	27	Srirangam	Fair weather	Yes	261	27	30—35, sweet	No
	Shobanapuram	28	Srirangam	Fair weather	Yes	250	27	30—35, sweet	No
	Sedamangalam	29	*	Fair weather	No	265	15	30—35, sweet	No
	Vazhiur	30	*	Fair weather	No	600	15	30—35, sweet	No
	Edumalai	31	*	Fair weather	No	300	15	30—35, sweet	No
	Omanadur	32	*	Fair weather	No	455	15	30—35, sweet	No
	Vandalai Gadalur	33	*	Fair weather	No	387	15	30—35, sweet	No
	Naikulam	34	*	Fair weather	No	310	15	30—35, sweet	No
	Perakurikka	35	*	Fair weather	No	472	15	30—35, sweet	No
	T. Leranipalayam	36	*	Fair weather	No	520	15	30—35, sweet	No
	Nambukurichi	37	*	Fair weather	No	772	15	30—35, sweet	No
	Sirukalappur	38	*	Fair weather	No	500	15	30—35, sweet	No
	Melararur	39	*	Fair weather	No	253	15	30—35, sweet	No
				Category II					
Tanjore	Maravakkadu	40	Thambikottay	Fair weather	Yes	8,000	35	—, may be brackish	No
				Category III					
Kanya Kumari	Thadikarankoram	41	Trivandrum	All weather	Yes	1,200	80—100	N.A.	No
	Muttam	42	Trivandrum	All weather	Yes	1,000	40	60—100, sweet	No

*The blocks are located in the interior and are situated far from the railway stations.

APPENDIX 'G'

Statement showing the ownership of the areas in categories I, II and III offered for reclamation

District	Block No.	Area of block (acres)	Area belonging to		
			Government	Private individuals	Village panchayats
Category I					
Chingleput	1	259	259	—	—
North Arcot	2—6	3,643	*a*	*a*	*a*
South Arcot	7—13	3,330	*b*	*b*	*b*
Ramanathapuram	14—16	5,664	5,639	25	—
Coimbatore	17	400	400	—	—
Tirunelveli	18	550	N.A.	N.A.	N.A.
	19	3,000	1,000	2,000	—
Salem	20—24	5,528	5,528	—	—
Tiruchirapalli	25—39	5,892	5,892	—	—
Category II					
Tanjore	40	8,000	8,000	—	—
Category III					
Kanya Kumari	41	1,200	*c*	*c*	*c*
	42	1,000	N.A.	N.A.	N.A.

a—Details not available. The areas belong mostly to Government.
b—Details not available. The areas belong mostly to private individuals.
c—Ownership under dispute.
N.A.—Not available.

APPENDIX 'H'

Model scheme for settlement of landless labourers particularly the Scheduled Castes and the Scheduled Tribes on a co-operative basis in the Madras State

About 23,000 acres of wastelands are available in the districts of North Arcot, South Arcot, Ramanathapuram, Salem and Tiruchirapalli, which can be utilised for settlement of landless labourers, particularly the Scheduled Castes and the Scheduled Tribes. The areas in the Salem and Tiruchirapalli districts offer good scope for undertaking settlement schemes as the lands are fertile in the former district, and in the latter district, settlement schemes have been successfully executed. Although no irrigation facilities are available at present, large areas can be brought under irrigation by the construction of shallow wells. A variety of agricultural crops can be grown in these areas, and, on an average, about 8—15 maunds of foodgrains per acre can be obtained.

A model settlement scheme for the area is given below :

It is proposed to settle on these lands landless labourers, particularly the Scheduled Castes and the Scheduled Tribes on a co-operative basis. It is not intended to present a rigid scheme since flexibility of details to suit local conditions in the *sine qua non* of the success of the settlement scheme. The co-operative method of organisation can be applied in settlement work in the following manner:

(1) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members; and

(2) Land may be owned individually, but jointly operated (*i.e.*, Co-operative Joint Farming).

In organising the societies, the viability and mutual knowledge and confidence which strengthen the co-operative character should receive due weight. The broad outlines of these patterns are indicated below :

Pattern I : *Individual farming with the help of service co-operatives*

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It should be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the Society. The co-operative society caters to the needs of the members, such as credit for agricultural production and supplies of agricultural requisites like fertilisers, improved seeds, insecticides etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land : The unit of land to be allotted to each settler will be 5 acres. The allottees will have the right to alienate their lands only after they pay back all the advances made to them by the Government. As the lands are not initially fit for cultivation and will entail expenditure on reclamation, the land revenue may be charged as follows:

1st year	..	No land revenue.
2nd year	..	1/3 of the assessed land revenue.
3rd year	..	2/3 of the assessed land revenue.
4th year & onwards	..	Full land revenue.

It should be obligatory on the part of the allottee to cultivate the land himself or with the help of his family members.

Method of working : Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 25 per member. This amount will be repayable in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the members concerned as and when needed. The society, if desired by the members, may also provide domestic requirements against their deposits.

One Agricultural Officer will supervise the work of a group of 5 societies. He will assist each society in drawing up production plan, and all the agricultural operations should be carried out by the members in accordance with the programme. The society will supply fertilisers, improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society, which will arrange for its marketing through the marketing society or through the normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

Social amenities :

(i) *Homestead* : About 1/6th of an acre of land may be allotted as a homestead plot. The value of the plot is estimated at Rs. 50.

(ii) *House building* : A sum of Rs. 1,000 may be advanced to each family towards the cost of building a house.

(iii) *Provision of drinking water* : One drinking water well with a hand pump may be provided for 25 families. The cost of the two wells with pumps will be Rs. 6,000, and the average cost per family will come to Rs. 120.

(iv) *School* : For a colony of 50 families, a school may be provided. The Education Department of the State will provide funds for this purpose.

(v) *Dispensary* : Provision for a dispensary may be made for each colony. The Medical Department will provide funds for this purpose.

Reclamation charges : The average cost of reclaiming the land will be about Rs. 110 per acre. Since the unit of allotment is 5 acres, the average cost will be Rs. 550 per family.

Follow-on cultivation charges : A sum of Rs. 600 will be required for meeting the cultivation charges on rainfed crops.

Rs. 600 may be provided per family for a pair of bullocks, etc.

Provision for rearing sheep : A sum of Rs. 50 may be provided to each settler for rearing sheep in order to supplement his income from agriculture.

Maintenance expenditure : During the first few years when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. The schedule of payment for each family may be worked out on the basis of a means test. Provision for maintenance charges of Rs. 600 may be made for a period of one year.

Administrative set up : A sum of Rs. 50 (one Manager on Rs. 100 p.m. plus D.A. and 1/5th the pay of Agricultural Officer at Rs. 200 p.m. plus D.A. Approximately, Rs. 2,500 for each colony) will be spent per family towards the administrative set-up.

To sum up, the details of expenditure per family on the various items will be as under:—

	Rs.
(1) Value of land	1,500
(2) Social amenities	1,170
(3) Reclamation charges	550
(4) Follow-on cultivation	1,200
(5) Provision for rearing sheep	50
(6) Maintenance expenses	600
(7) Administrative set-up	50
TOTAL	5,120

Pattern of assistance : Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as follows:

	Loan	Grant
	Rs.	Rs.
I. ***Individual members :***		
(*a*) Share capital	25	—
(*b*) Homestead plot and house	1,050	—
TOTAL ..	1,075	—
II. ***Through co-operative society :***		
(*a*) Drinking water supply	—	120
(*b*) Reclamation charges	550	—
(*c*) Maintenance expenses	600	—
(*d*) Follow-on cultivation;		
(*i*) Bullocks and implements	600	—
(*ii*) Cultivation charges	600	—
(*e*) Provision for rearing sheep	50	—
(*f*) Administrative set-up	—	50
TOTAL ..	2,400	170

The loans for cultivation charges will be interest-free and recoverable one year after the harvest. The loans for bullocks, equipment, etc., should be recovered from the third year in 5 annual instalments with the rate of interest as for taccavi loans. The loans for the homestead plot and house building should be recovered from the 5th year in 15 annual instalments with the rate of interest as for taccavi loans. The occupancy price of land should be paid from the 6th year in 5 annual instalments.

Pattern II : Individually owned but jointly operated.

The co-operative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land : The scale of allotment of land to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

Method of working : The society will formulate the production plan through its elected Managing Committee. The Managing Committee may formulate the day-to-day working plan for the members either by forming some special groups or on an *ad hoc* basis. The means of cultivation *i.e.*, seeds, fertilisers, implements, bullocks etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidy received from the Government towards the wages on labour, maintenance charges etc. would be availed of for this purpose. The crop would jointly be harvested and the income would be disbursed among the members after deducting the expenditure incurred by the society. The Agricultural Officer attached to a group of 5 societies will provide the necessary technical guidance with regard to the formulation of the production programme, the use of fertilisers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the society will keep the necessary accounts, etc.

The social amenities, reclamation charges, follow-on cultivation charges, maintenance expenditure and administrative set-up for the organisation of this scheme will be the same as in Pattern I.

This pattern will also facilitate undertaking of the follow-on cultivation.

Pattern of assistance : All the assistance, except loans for homestead and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

REPORT

ON

LOCATION AND UTILISATION

OF

WASTELANDS IN INDIA

PART VIII—MADRAS

सत्यमेव जयते

WASTELANDS SURVEY AND RECLAMATION
COMMITTEE
MINISTRY OF FOOD AND AGRICULTURE
GOVERNMENT OF INDIA
NOVEMBER, 1961

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories:—

(a) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis;* and

(b) lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl/59, dated the 11th June, 1959, (Appendix A) with the following terms of reference:—

(i) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(ii) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(iii) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative; and

(iv) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each

State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz.*, Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops grown, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under:—

(i) forests,
(ii) barren and unculturable lands,
(iii) land put to non-agricultural uses,
(iv) permanent pastures and meadows,
(v) areas under miscellaneous trees and crops,
(vi) culturable waste,
(vii) current fallows,
(viii) fallows other than current fallows, and
(ix) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.*, "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PREFACE

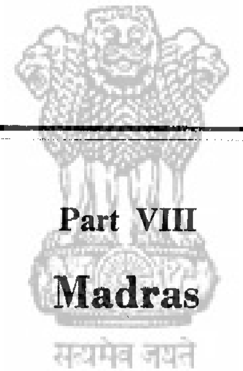
The report deals with the availability of wastelands in large-sized blocks in Madras and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands found in the State, we undertook tours of certain representative areas on the 28th and 29th November, 1960. On the 28th November, 1960, wastelands in the Attur taluk in the Salem district were visited while on the next day, the areas in the Musiri and Lalgudi taluks in the Tiruchirapalli district where some reclamation and resettlement schemes undertaken by the State Government were in progress, were inspected. On the 21st September, 1961, the draft report of the Committee was discussed at Madras with the co-opted members in the State and finalised.

3. We wish to express our gratitude to the officials of the Madras Government who gave us the benefit of their views. We are grateful to the Liaison Officer, Shri S. M. Sulaiman, formerly Joint Director of Agriculture, for obtaining the necessary data and arranging the tours of the Committee. We are also thankful to the District Collectors of Salem and Tiruchirapalli who were good enough to accompany us on our tours and showed us round the areas.

4. We are highly indebted to Dr. S. P. Raychaudhari, Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities of the Cartographic laboratory at the Institute for printing the maps included in the Report.

सत्यमेव जयते



Part VIII

Madras

PART I

THE PUNJAB

सत्यमेव जयते